GEORGIA DEPARTMENT OF TRANSPORTATION

GDOT Project No: NH000-0073-03(242)

PI No: 714130

JBT Project No. 255717

Bridge No. 31
I-75 REVERSIBLE OVER NOONDAY CREEK

November, 2009

COBB COUNTY

DESIGN CALCULATIONS

Note 1: Georgia Department of Transportation (GDOT) terminated Contract Number TOURDPPI60072 for its convenience prior to the completion of all work under that contract and directed that the work with respect to these calculations be discontinued.

(a) These calculations were not completed at the time of GDOT's direction and the information contained herein is not complete and/or has not been fully verified or checked. These calculations are a work-in-progress and are presented only as such.

(b) Any user is cautioned that the use of these calculations and any related information or calculations, without access to pertinent factors and without proper regard for their purpose, could lead to erroneous conclusions.

(c) If any such calculations or any information contained herein is used in future work efforts or any follow on design work activity, a complete confirmation of the information contained herein should be performed prior to any such use.

(d) GTP has no responsibility for the use of this information not under its direct control.

Prepared for Georgia Transportation Partners
Atlanta, Georgia

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Purpose of Calculation

Bridge design calculations for Bridge #31 were made for costing purposes.

1. Specifications and References

AASHTO 17th Edition, 2002
GDOT Bridge Design Manual, 2008

2. Computer

Computer Type Used: PC
Operating System: Windows XP, Pentium 4, 2GB RAM (min.)

3. Computer Programs (Standard Computer Program)

Excel, Microsoft Office 2003 – JBT Calculation Spreadsheets
BRLLCA, 2008 – Live Load Case Program, by GDOT
BRPIER, 2008 – Pier Design and Analysis, by GDOT
BRSPAN, 2008 – Simple Beam Design and Analysis, by GDOT

CALCULATION COVER SHEET

PROJECT	JOB NO.	CALC NO.	SHEET
I-75 / I-575 NORTHWEST CORRIDOR	NH000-0073-03(242)	BR#31	1
SUBJECT	DISCIPLINE		
Slab Design	STRUCTURAL		

CALCULATION STATUS DESIGNATION	PRELIMINARY	CONFIRMED	SUPSEDED	VOIDED	INCOMPLETE
	☐	☐	☐	☐	X

COMPUTER PROGRAM/TYPE	SCP	MAINFRAME	PC	PROGRAM	VERSION/RELEASE NO.
	(X) YES ( ) NO	( )	(X)	Excel	2003

Note 1: Georgia Department of Transportation (GDOT) terminated Contract Number TOURDPPI60072 for its convenience prior the completion of all work under that contract and directed that the work with respect to these calculations be discontinued.
(a) These calculations were not completed at the time of GDOT's direction and the information contained herein is not complete and/or has not been fully verified or checked. These calculations are a work-in-progress and are presented only as such.
(b) Any user is cautioned that the use of these calculations and any related information or calculations, without access to factors and without proper regard for their purpose, could lead to erroneous conclusions.
(c) If any such calculations or any information contained herein is used in future work efforts or any follow on design work activity, a complete confirmation of the information contained herein should be performed prior to any such use.
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Slab Design calculations are included for spans 1, 2 and 3.

NO.	REASON FOR REVISION	TOTAL NO. OF SHEETS	LAST SHEET NO.	BY	CHECKED	APPROVED/ ACCEPTED	DATE
A	As per GDOT's termination for convenience direction	12	12	JCR			11/30/09

RECORD OF REVISIONS

CALCULATION SHEET

PROJECT: I-75 / I-575 NORTHWEST CORRIDOR
JOB NUMBER NH000-0073-03(242)
CALC NO. BR#31

SUBJECT: Slab Design
BY: JCR DATE: 11/30/2009

SHEET NO.
SHEET REV.

Sufficient sample calculations representative of the scope and conditions in the design calculation were performed and the results compared to demonstrate the computer program adequacy.

BRIDGE: **I-75 over Noonday Creek**
COUNTY: **COBB**
P.I. NO: **713640**
PROJECT: **NH000-0575-01(028)**

J.B. TRIMBLE, INC.

JOB NO: **31-6036**
DESIGNED BY: **SHG**
DATE: **10/14/2009**

PSC 10/21/09

SPAN 1

PRELIMINARY INFORMATION

INTERMEDIATE SLAB THICKNESS =	**8.125**	IN	
OVERHANG SLAB THICKNESS =	**8.125**	IN	
GIRDER SPACING =	**7.500**	FT	
NUMBER OF GIRDERS =	**5**		
OVERHANG WIDTH =	**3.000**	FT	
TOP FLANGE WIDTH =	**12.000**	IN	
CONCRETE STRENGTH, f'c =	**3500**	PSI	
STEEL STRENGTH, fy =	**60000**	PSI	
PARAPET HEIGHT =	**2.667**	FT	
PARAPET WIDTH =	**1.625**	FT	
PARAPET AREA =	**2.700**	SF	
C.G. FROM OUTSIDE =	**0.667**	FT	
TOP BAR CLEARANCE =	**2.750**	IN	
BOTTOM BAR CLEARANCE =	**1.000**	IN	
GROOVED DEPTH =	**0.250**	IN	
DESIGN SPEED =	**50.00**	MPH (IF CENTRIFUGAL CONSIDERED)	
RADIUS =	**0.00**	FT (IF CENTRIFUGAL CONSIDERED)	
WHEEL LOAD =	**16.00**	KIPS	**HS20**
IMPACT FACTOR =	**1.30**		
ADDITIONAL LOAD =	**30.00**	PSF	
RAILING LOAD =	**10.00**	KIP	AT TOP OF PARAPET

BAR DETAILS		
SIZE	AREA	WEIGHT
Not Needed	0	0
No. 3	0.11	0.376
No. 4	0.20	0.668
No. 5	0.31	1.043
No. 6	0.44	1.502
No. 7	0.60	2.044
No. 8	0.79	2.670
No. 9	1.00	3.400
No. 10	1.27	4.300
No. 11	1.56	5.310
No. 14	2.25	7.650
No. 18	4.00	13.600

INTERMEDIATE SLAB DESIGN

BEAM TYPE: **STEEL** (TB, STEEL, PSC, BULB-T)

EFFECTIVE SPAN LENGTH = 7.000 FT *AASHTO 3.24.1.2*

DEAD LOAD

SLAB D.L. =	0.102	KIP/FT/LF
ADDITIONAL D.L. =	0.030	KIP/FT/LF
TOTAL D.L.=	0.132	KIP / FT / LF

DEAD LOAD MOMENT = 1.3 * (WT DL) * (SPAN)^2 / 10 = 0.838 KIP-FT / LF

LIVE LOAD

WHEEL LOAD = 16.00 KIPS

CONT. FACTOR = 0.80
IMPACT = 1.30

LIVE LOAD MOMENT = 2.17 * ((S + 2)/32) * P(LL + I) * 0.8 = 10.156 KIP-FT / LF *AASHTO 3.24.3.1*

CENTRIFUGAL LOAD *AASHTO 3.10.1*

C = 6.68 * S^2/ R = 0.000 FRACTION OF LIVE LOAD

CENTRIFUGAL FORCE MOMENT = 1.3 * ((S + 2)/32) * P (LL+ I) * 0.8 * C = 0.000 KIP-FT / LF *AASHTO TABLE 3.22.1A*

TOTAL DESIGN MOMENT (Ø Mu) = 10.994 KIP-FT / LF = 131.92 K-IN / LF

FLEXURE STRENGTH *AASHTO 8.16.3.2*

Ø Mn > Mu Ø = 0.90

Ø Mn = Ø * [As * fy * (d - a/2)] where a = As * fy / [0.85 * f'c * b]

a =	1.681	As				
d_{top} =	5.063	IN	USE **5 BAR**	As =	0.31	IN^2 /LF
d_{bot} =	6.563	IN	USE **5 BAR**	As =	0.31	IN^2 /LF

TOP STEEL

273.375 As - 45.38 As^2 = 131.92 K-IN / LF

TOP BAR = NO. 5 SPACED AT 6.250 IN As = 0.60 IN^2 /LF

Ø Mn = 146.64 K-IN / LF ≥ Ø Mu = 131.92 K-IN / LF OK

BOTTOM STEEL

354.375 As - 45.38 As^2 = 131.92 K-IN / LF

BOT BAR = NO. 5 SPACED AT 6.250 IN As = 0.60 IN^2 /LF

Ø Mn = 194.85 K-IN / LF ≥ Ø Mu = 131.92 K-IN / LF OK

BRIDGE: **I-75 over Noonday Creek**
COUNTY: **COBB**
P.I. NO: **713640**
PROJECT: **NH000-0575-01(028)**

J.B. TRIMBLE, INC.

JOB NO: **31-6036**
DESIGNED BY: **SHG**
DATE: **10/14/2009**

SPAN 1

OVERHANG SLAB DESIGN

EFFECTIVE SPAN LENGTH = 2.500 FT *AASHTO 3.24.5.1*

DEAD LOAD

SLAB D.L. =	0.102	KIP/FT/LF
ADDITIONAL D.L. =	0.030	KIP/FT/LF
PARAPET D.L.=	0.405	KIP/FT/LF

DL MOMENT @ FLANGE:

SLAB MOM =	0.317	KIP-FT/LF
ADD'L MOM =	0.011	KIP-FT/LF
PARAPET MOM =	0.743	KIP-FT/LF
TOTAL MOM =	1.071	KIP-FT/LF

DL MOMENT @ EDGE OF BARRIER:

SLAB MOM =	0.134	KIP-FT/LF
ADD'L MOM =	0.000	KIP-FT/LF
PARAPET MOM =	0.388	KIP-FT/LF
TOTAL MOM =	0.522	KIP-FT/LF

DEAD LOAD MOMENT @ FLANGE= 1.3 * TOTAL MOMENT = 1.393 KIP-FT / LF
D.L. MOMENT @ EDGE OF BARRIER= 1.3 * TOTAL MOMENT = 0.679 KIP-FT / LF

LIVE LOAD

WHEEL LOAD 16.00 KIPS

IMPACT =	1.30	
MOM ARM (X)=	0.38	FT
E = 0.8 * X + 3.75 =	4.05	FT

LIVE LOAD MOMENT = 2.17 * (P(LL + I) / E) * X = 4.179 KIP-FT / LF *AASHTO 3.24.5.1.1*

CENTRIFUGAL LOAD

C = 6.68 * S^2/ R = 0.000 FRACTION OF LIVE LOAD

CENTRIFUGAL FORCE MOMENT = 1.3 * (P(LL + I) / E) * X * C = 0.000 KIP-FT / LF

RAILING LOAD *AASHTO 3.24.5.2*

RAILING LOAD = 10.00 KIPS

RAILING LOAD @ FLANGE:

MOM ARM (H) =	3.118	FT
DISTANCE (X) =	1.83	FT
E = 0.8 * X + 5.00 =	6.47	FT

RAILING LOAD @ EDGE OF BARRIER:

MOM ARM (H) =	3.12	FT
DISTANCE (X) =	0.96	FT
E = 0.8 * X + 5.00 =	5.77	FT

RAIL MOM @ FLANGE= 2.17 * (P_{rail}/ E) * H = 10.463 KIP-FT / LF

RAIL MOM @ EDGE OF BARRIER= 2.17 * (P_{rail}/ E) * H = 11.733 KIP-FT / LF

SUMMARY OF MOMENTS:

DL + LL @ FLANGE = 5.572 KIP-FT / LF
DL + RAIL @ FLANGE = 11.856 KIP-FT / LF
DL + RAIL @ BARRIER = 12.412 KIP-FT / LF

TOTAL DESIGN MOMENT (Ø Mu) = 12.412 KIP-FT / LF = 148.95 K-IN / LF

FLEXURE STRENGTH

AASHTO 8.16.3.2

Ø Mn > Mu Ø = 0.90

Ø Mn = Ø * [As * fy * (d - a/2)] where a = As * fy / [0.85 * f'c * b]

a = 1.681 As

d_{top} = 5.063 IN USE **5 BAR** As = 0.31 IN^2 /LF

PROVIDE ADDITIONAL OVERHANG STEEL = **4 BAR** As = 0.20 IN^2 /LF

TOP STEEL

273.375 As - 45.38 As^2 = 148.95 K-IN / LF

TOP BAR = NO. 5 SPACED AT 6.250 IN As = 0.60 IN^2 /LF

Ø Mn = 146.64 K-IN / LF < Ø Mu = 148.95 K-IN / LF ADD. REINF. NEEDED!!

ADD'L BAR = NO. 4 SPACED AT 12.50 IN As = 0.19 IN^2 /LF

Mn = 187.08 K-IN / LF ≥ Mu = 148.95 K-IN / LF OK

BRIDGE: **I-75 over Noonday Creek**
COUNTY: **COBB**
P.I. NO: **713640**
PROJECT: **NH000-0575-01(028)**

J.B. TRIMBLE, INC.

JBT

SPAN 2

JOB NO: **31-6036**
DESIGNED BY: **SHG**
DATE: **10/14/2009**

PJC 10/21/09

PRELIMINARY INFORMATION

INTERMEDIATE SLAB THICKNESS =	**8.250**	IN	
OVERHANG SLAB THICKNESS =	**8.250**	IN	
GIRDER SPACING =	**8.000**	FT	
NUMBER OF GIRDERS =	**5**		
OVERHANG WIDTH =	**3.000**	FT	
TOP FLANGE WIDTH =	**12.000**	IN	
CONCRETE STRENGTH, f'c =	**3500**	PSI	
STEEL STRENGTH, fy =	**60000**	PSI	
PARAPET HEIGHT =	**2.667**	FT	
PARAPET WIDTH =	**1.625**	FT	
PARAPET AREA =	**2.700**	SF	
C.G. FROM OUTSIDE =	**0.667**	FT	
TOP BAR CLEARANCE =	**2.750**	IN	
BOTTOM BAR CLEARANCE =	**1.000**	IN	
GROOVED DEPTH =	**0.250**	IN	
DESIGN SPEED =	**50.00**	MPH	(IF CENTRIFUGAL CONSIDERED)
RADIUS =	**0.00**	FT	(IF CENTRIFUGAL CONSIDERED)
WHEEL LOAD =	**16.00**	KIPS	**HS20**
IMPACT FACTOR =	**1.30**		
ADDITIONAL LOAD =	**30.00**	PSF	
RAILING LOAD =	**10.00**	KIP	AT TOP OF PARAPET

BAR DETAILS		
SIZE	AREA	WEIGHT
Not Needed	0	0
No. 3	0.11	0.376
No. 4	0.20	0.668
No. 5	0.31	1.043
No. 6	0.44	1.502
No. 7	0.60	2.044
No. 8	0.79	2.670
No. 9	1.00	3.400
No. 10	1.27	4.300
No. 11	1.56	5.310
No. 14	2.25	7.650
No. 18	4.00	13.600

INTERMEDIATE SLAB DESIGN

BEAM TYPE: **STEEL** (TB, STEEL, PSC, BULB-T)

EFFECTIVE SPAN LENGTH = 7.500 FT *AASHTO 3.24.1.2*

DEAD LOAD

SLAB D.L. =	0.103	KIP/FT/LF
ADDITIONAL D.L. =	0.030	KIP/FT/LF
TOTAL D.L.=	0.133	KIP / FT / LF

DEAD LOAD MOMENT = 1.3 * (WT DL) * (SPAN)^2 / 10 = 0.973 KIP-FT / LF

LIVE LOAD

WHEEL LOAD = 16.00 KIPS

CONT. FACTOR = 0.80
IMPACT = 1.30

LIVE LOAD MOMENT = 2.17 * ((S + 2)/32) * P(LL + I) * 0.8 = 10.720 KIP-FT / LF *AASHTO 3.24.3.1*

CENTRIFUGAL LOAD *AASHTO 3.10.1*

C = 6.68 * S^2/ R = 0.000 FRACTION OF LIVE LOAD

CENTRIFUGAL FORCE MOMENT = 1.3 * ((S + 2)/32) * P (LL+ I) * 0.8 * C = 0.000 KIP-FT / LF *AASHTO TABLE 3.22.1A*

TOTAL DESIGN MOMENT (Ø Mu) = 11.693 KIP-FT / LF = 140.32 K-IN / LF

FLEXURE STRENGTH *AASHTO 8.16.3.2*

Ø Mn > Mu Ø = 0.90

Ø Mn = Ø * [As * fy * (d - a/2)] where a = As * fy / [0.85 * f'c * b]

a =	1.681	As				
d_{top} =	5.188	IN	USE **5 BAR**	As =	0.31	IN^2 /LF
d_{bot} =	6.688	IN	USE **5 BAR**	As =	0.31	IN^2 /LF

TOP STEEL

280.125 As - 45.38 As^2 = 140.32 K-IN / LF

TOP BAR = NO. 5 SPACED AT 6.000 IN As = 0.62 IN^2 /LF

Ø Mn = 156.23 K-IN / LF ≥ Ø Mu = 140.32 K-IN / LF OK

BOTTOM STEEL

361.125 As - 45.38 As^2 = 140.32 K-IN / LF

BOT BAR = NO. 5 SPACED AT 6.000 IN As = 0.62 IN^2 /LF

Ø Mn = 206.45 K-IN / LF ≥ Ø Mu = 140.32 K-IN / LF OK

BRIDGE: **I-75 over Noonday Creek**
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J.B. TRIMBLE, INC.

JOB NO: **31-6036**
DESIGNED BY: **SHG**
DATE: **10/14/2009**

SPAN 2

OVERHANG SLAB DESIGN

EFFECTIVE SPAN LENGTH = 2.500 FT *AASHTO 3.24.5.1*

DEAD LOAD

SLAB D.L. =	0.103	KIP/FT/LF
ADDITIONAL D.L. =	0.030	KIP/FT/LF
PARAPET D.L.=	0.405	KIP/FT/LF

DL MOMENT @ FLANGE:

SLAB MOM =	0.322	KIP-FT/LF
ADD'L MOM =	0.011	KIP-FT/LF
PARAPET MOM =	0.743	KIP-FT/LF
TOTAL MOM =	1.076	KIP-FT/LF

DL MOMENT @ EDGE OF BARRIER:

SLAB MOM =	0.136	KIP-FT/LF
ADD'L MOM =	0.000	KIP-FT/LF
PARAPET MOM =	0.388	KIP-FT/LF
TOTAL MOM =	0.524	KIP-FT/LF

DEAD LOAD MOMENT @ FLANGE= 1.3 * TOTAL MOMENT = 1.399 KIP-FT / LF
D.L. MOMENT @ EDGE OF BARRIER= 1.3 * TOTAL MOMENT = 0.682 KIP-FT / LF

LIVE LOAD

WHEEL LOAD 16.00 KIPS

IMPACT =	1.30	
MOM ARM (X)=	0.38	FT
E = 0.8 * X + 3.75 =	4.05	FT

LIVE LOAD MOMENT = 2.17 * (P(LL + I) / E) * X = 4.179 KIP-FT / LF *AASHTO 3.24.5.1.1*

CENTRIFUGAL LOAD

C = 6.68 * S^2/ R = 0.000 FRACTION OF LIVE LOAD

CENTRIFUGAL FORCE MOMENT = 1.3 * (P(LL + I) / E) * X * C = 0.000 KIP-FT / LF

RAILING LOAD *AASHTO 3.24.5.2*

RAILING LOAD = 10.00 KIPS

RAILING LOAD @ FLANGE:

MOM ARM (H) =	3.125	FT
DISTANCE (X) =	1.83	FT
E = 0.8 * X + 5.00 =	6.47	FT

RAILING LOAD @ EDGE OF BARRIER:

MOM ARM (H) =	3.13	FT
DISTANCE (X) =	0.96	FT
E = 0.8 * X + 5.00 =	5.77	FT

RAIL MOM @ FLANGE= 2.17 * (P_{rail}/ E) * H = 10.486 KIP-FT / LF

RAIL MOM @ EDGE OF BARRIER= 2.17 * (P_{rail}/ E) * H = 11.759 KIP-FT / LF

SUMMARY OF MOMENTS:

DL + LL @ FLANGE = 5.578 KIP-FT / LF
DL + RAIL @ FLANGE = 11.886 KIP-FT / LF
DL + RAIL @ BARRIER = 12.441 KIP-FT / LF

TOTAL DESIGN MOMENT (Ø Mu) = 12.441 KIP-FT / LF

FLEXURE STRENGTH

AASHTO 8.16.3.2

Ø Mn > Mu Ø = 0.90

Ø Mn = Ø * [As * fy * (d - a/2)] where a = As * fy / [0.85 * f'c * b]

a = 1.681 As

d_{top} = 5.188 IN USE **5 BAR** As = 0.31 IN^2 /LF

TOP STEEL

280.125 As - 45.38 As^2 = 149.29 K-IN / LF

TOP BAR = NO. 5 SPACED AT 6.000 IN As = 0.62 IN^2 /LF

Ø Mn = 156.23 K-IN / LF ≥ Ø Mu = 149.29 K-IN / LF OK

BRIDGE: **I-75 over Noonday Creek**
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J.B. TRIMBLE, INC.

JOB NO: **31-6036**
DESIGNED BY: **SHG**
DATE: **10/14/2009**

PSC 10/21/09

SPAN 3

PRELIMINARY INFORMATION

INTERMEDIATE SLAB THICKNESS =	**8.500**	IN	
OVERHANG SLAB THICKNESS =	**8.500**	IN	
GIRDER SPACING =	**8.500**	FT	
NUMBER OF GIRDERS =	**5**		
OVERHANG WIDTH =	**3.000**	FT	
TOP FLANGE WIDTH =	**12.000**	IN	
CONCRETE STRENGTH, f'c =	**3500**	PSI	
STEEL STRENGTH, fy =	**60000**	PSI	
PARAPET HEIGHT =	**2.667**	FT	
PARAPET WIDTH =	**1.625**	FT	
PARAPET AREA =	**2.700**	SF	
C.G. FROM OUTSIDE =	**0.667**	FT	
TOP BAR CLEARANCE =	**2.750**	IN	
BOTTOM BAR CLEARANCE =	**1.000**	IN	
GROOVED DEPTH =	**0.250**	IN	
DESIGN SPEED =	**50.00**	MPH	(IF CENTRIFUGAL CONSIDERED)
RADIUS =	**0.00**	FT	(IF CENTRIFUGAL CONSIDERED)
WHEEL LOAD =	**16.00**	KIPS	**HS20**
IMPACT FACTOR =	**1.30**		
ADDITIONAL LOAD =	**30.00**	PSF	
RAILING LOAD =	**10.00**	KIP	AT TOP OF PARAPET

3626.55

BAR DETAILS		
SIZE	AREA	WEIGHT
Not Needed	0	0
No. 3	0.11	0.376
No. 4	0.20	0.668
No. 5	0.31	1.043
No. 6	0.44	1.502
No. 7	0.60	2.044
No. 8	0.79	2.670
No. 9	1.00	3.400
No. 10	1.27	4.300
No. 11	1.56	5.310
No. 14	2.25	7.650
No. 18	4.00	13.600

INTERMEDIATE SLAB DESIGN

BEAM TYPE: **STEEL** (TB, STEEL, PSC, BULB-T)

EFFECTIVE SPAN LENGTH = 8.000 FT *AASHTO 3.24.1.2*

DEAD LOAD

SLAB D.L. =	0.106	KIP/FT/LF
ADDITIONAL D.L. =	0.030	KIP/FT/LF
TOTAL D.L.=	0.136	KIP / FT / LF

DEAD LOAD MOMENT = 1.3 * (WT DL) * (SPAN)^2 / 10 = 1.134 KIP-FT / LF

LIVE LOAD

WHEEL LOAD = 16.00 KIPS

CONT. FACTOR = 0.80
IMPACT = 1.30

LIVE LOAD MOMENT = 2.17 * ((S + 2)/32) * P(LL + I) * 0.8 = 11.284 KIP-FT / LF *AASHTO 3.24.3.1*

CENTRIFUGAL LOAD *AASHTO 3.10.1*

C = 6.68 * S^2/ R = 0.000 FRACTION OF LIVE LOAD

CENTRIFUGAL FORCE MOMENT = 1.3 * ((S + 2)/32) * P (LL+ I) * 0.8 * C = 0.000 KIP-FT / LF *AASHTO TABLE 3.22.1A*

TOTAL DESIGN MOMENT (Ø Mu) = 12.418 KIP-FT / LF = 149.01 K-IN / LF

FLEXURE STRENGTH *AASHTO 8.16.3.2*

Ø Mn > Mu Ø = 0.90

Ø Mn = Ø * [As * fy * (d - a/2)] where a = As * fy / [0.85 * f'c * b]

a = 1.681 As

d_{top} = 5.438 IN USE **5 BAR** As = 0.31 IN^2 /LF

d_{bot} = 6.938 IN USE **5 BAR** As = 0.31 IN^2 /LF

TOP STEEL

293.625 As - 45.38 As^2 = 149.01 K-IN / LF

TOP BAR = NO. 5 SPACED AT 5.875 IN As = 0.63 IN^2 /LF

Ø Mn = 167.73 K-IN / LF ≥ Ø Mu = 149.01 K-IN / LF OK

BOTTOM STEEL

374.625 As - 45.38 As^2 = 149.01 K-IN / LF

BOT BAR = NO. 5 SPACED AT 5.875 IN As = 0.63 IN^2 /LF

Ø Mn = 219.02 K-IN / LF ≥ Ø Mu = 149.01 K-IN / LF OK

BRIDGE: **I-75 over Noonday Creek**
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J.B. TRIMBLE, INC.

JOB NO: **31-6036**
DESIGNED BY: **SHG**
DATE: **10/14/2009**

SPAN 3

OVERHANG SLAB DESIGN

EFFECTIVE SPAN LENGTH = 2.500 FT *AASHTO 3.24.5.1*

DEAD LOAD

SLAB D.L. =	0.106	KIP/FT/LF
ADDITIONAL D.L. =	0.030	KIP/FT/LF
PARAPET D.L.=	0.405	KIP/FT/LF

DL MOMENT @ FLANGE:

SLAB MOM =	0.332	KIP-FT/LF
ADD'L MOM =	0.011	KIP-FT/LF
PARAPET MOM =	0.743	KIP-FT/LF
TOTAL MOM =	1.086	KIP-FT/LF

DL MOMENT @ EDGE OF BARRIER:

SLAB MOM =	0.140	KIP-FT/LF
ADD'L MOM =	0.000	KIP-FT/LF
PARAPET MOM =	0.388	KIP-FT/LF
TOTAL MOM =	0.528	KIP-FT/LF

DEAD LOAD MOMENT @ FLANGE= 1.3 * TOTAL MOMENT = 1.412 KIP-FT / LF
D.L. MOMENT @ EDGE OF BARRIER= 1.3 * TOTAL MOMENT = 0.687 KIP-FT / LF

LIVE LOAD

WHEEL LOAD 16.00 KIPS

IMPACT =	1.30	
MOM ARM (X)=	0.38	FT
E = 0.8 * X + 3.75 =	4.05	FT

LIVE LOAD MOMENT = 2.17 * (P(LL + I) / E) * X = 4.179 KIP-FT / LF *AASHTO 3.24.5.1.1*

CENTRIFUGAL LOAD

C = 6.68 * S^2/ R = 0.000 FRACTION OF LIVE LOAD

CENTRIFUGAL FORCE MOMENT = 1.3 * (P(LL + I) / E) * X * C = 0.000 KIP-FT / LF

RAILING LOAD *AASHTO 3.24.5.2*

RAILING LOAD = 10.00 KIPS

RAILING LOAD @ FLANGE:

MOM ARM (H) =	3.139	FT
DISTANCE (X) =	1.83	FT
E = 0.8 * X + 5.00 =	6.47	FT

RAILING LOAD @ EDGE OF BARRIER:

MOM ARM (H) =	3.14	FT
DISTANCE (X) =	0.96	FT
E = 0.8 * X + 5.00 =	5.77	FT

RAIL MOM @ FLANGE= 2.17 * (P_{rail}/ E) * H = 10.533 KIP-FT / LF

RAIL MOM @ EDGE OF BARRIER= 2.17 * (P_{rail}/ E) * H = 11.812 KIP-FT / LF

SUMMARY OF MOMENTS:

DL + LL @ FLANGE = 5.591 KIP-FT / LF
DL + RAIL @ FLANGE = 11.945 KIP-FT / LF
DL + RAIL @ BARRIER = 12.499 KIP-FT / LF

TOTAL DESIGN MOMENT (Ø Mu) = 12.499 KIP-FT / LF

FLEXURE STRENGTH

AASHTO 8.16.3.2

Ø Mn > Mu Ø = 0.90

Ø Mn = Ø * [As * fy * (d - a/2)] where a = As * fy / [0.85 * f'c * b]

a = 1.681 As

d_{top} = 5.438 IN USE **5 BAR** As = 0.31 IN^2 /LF

TOP STEEL

293.625 As - 45.38 As^2 = 149.98 K-IN / LF

TOP BAR = NO. 5 SPACED AT 5.875 IN As = 0.63 IN^2 /LF

Ø Mn = 167.73 K-IN / LF ≥ Ø Mu = 149.98 K-IN / LF OK

SERVICE LOAD DESIGN OF BRIDGE SLAB

Georgia Department of Transportation 13-MAY-04
Office of Bridge and Structural Design 07:49:26
October 2003

WHEEL LOAD (Kips)	fc (ksi)	fs (ksi)	n	SLAB COVER (in)	FUTURE PAVING (kips/ft^2)	CONTINUITY FACTOR
16.00	1.400	24.000	9	2.750	0.030	0.8

EFFECTIVE SPAN LENGTH (ft-in)	SLAB THICKNESS MINIMUM (in)	SLAB THICKNESS ACTUAL (in)	SIZE AND SPACING OF MAIN REINFORCEMENT (in)	DISTRUBUTION REINFORCEMENT MIDDLE HALF	DISTRUBUTION REINFORCEMENT OUTER QUARTERS
6 - 6	7.8889	8.000	# 5 at 6.500	7 -# 4	4 -# 4
6 - 7	7.9167	8.000	# 5 at 6.375	7 -# 4	4 -# 4
6 - 8	7.9445	8.000	# 5 at 6.375	7 -# 4	4 -# 4
6 - 9	7.9722	8.000	# 5 at 6.250	7 -# 4	4 -# 4
6 - 10	7.9998	8.000	# 5 at 6.250	7 -# 4	4 -# 4
6 - 11	8.0309	8.125	# 5 at 6.250	7 -# 4	4 -# 4
7 - 0	8.0585	8.125	# 5 at 6.250	7 -# 4	4 -# 4
7 - 1	8.0860	8.125	# 5 at 6.125	8 -# 4	4 -# 4
7 - 2	8.1134	8.125	# 5 at 6.125	8 -# 4	4 -# 4
7 - 3	8.1446	8.250	# 5 at 6.125	8 -# 4	4 -# 4
7 - 4	8.1719	8.250	# 5 at 6.125	8 -# 4	4 -# 4
7 - 5	8.1992	8.250	# 5 at 6.000	8 -# 4	4 -# 4
7 - 6	8.2265	8.250	# 5 at 6.000	8 -# 4	4 -# 4
7 - 7	8.2577	8.375	# 5 at 6.000	8 -# 4	4 -# 4
7 - 8	8.2849	8.375	# 5 at 6.000	8 -# 4	4 -# 4
7 - 9	8.3121	8.375	# 5 at 5.875	9 -# 4	6 -# 4
7 - 10	8.3392	8.375	# 5 at 5.875	9 -# 4	6 -# 4
7 - 11	8.3662	8.375	# 5 at 5.750	9 -# 4	6 -# 4
8 - 0	8.3976	8.500	# 5 at 5.875	9 -# 4	6 -# 4
8 - 1	8.4246	8.500	# 5 at 5.750	9 -# 4	6 -# 4
8 - 2	8.4515	8.500	# 5 at 5.750	9 -# 4	6 -# 4
8 - 3	8.4784	8.500	# 5 at 5.625	9 -# 4	6 -# 4
8 - 4	8.5099	8.625	# 5 at 5.750	9 -# 4	6 -# 4
8 - 5	8.5367	8.625	# 5 at 5.625	10 -# 4	6 -# 4
8 - 6	8.5636	8.625	# 5 at 5.625	10 -# 4	6 -# 4
8 - 7	8.5903	8.625	# 5 at 5.500	10 -# 4	6 -# 4
8 - 8	8.6170	8.625	# 5 at 5.500	10 -# 4	6 -# 4
8 - 9	8.6487	8.750	# 5 at 5.625	10 -# 4	6 -# 4
8 - 10	8.6754	8.750	# 5 at 5.500	10 -# 4	6 -# 4
8 - 11	8.7020	8.750	# 5 at 5.500	11 -# 4	6 -# 4
9 - 0	8.7286	8.750	# 5 at 5.375	11 -# 4	6 -# 4
9 - 1	8.7605	8.875	# 5 at 5.500	11 -# 4	6 -# 4
9 - 2	8.7871	8.875	# 5 at 5.375	11 -# 4	6 -# 4
9 - 3	8.8136	8.875	# 5 at 5.375	11 -# 4	6 -# 4
9 - 4	8.8401	8.875	# 5 at 5.375	11 -# 4	6 -# 4
9 - 5	8.8665	8.875	# 5 at 5.250	12 -# 4	6 -# 4

Span 1
1'-6"
-1'-0"
12*(12"/4)
7'-0"

Span 2

Span 3

SECTION IV – CONCRETE AND REINFORCING STEEL

BRIDGE DECK DESIGN No. 4.01

When designing bridge decks, the following criteria shall be applied:

For cast-in-place decks north of the fall line:

1. Specify Class AA concrete except for post-tensioned concrete boxes which shall have Class AA as a minimum, but may require a higher 28-day strength.
2. **Specify 2 ¾" (70 mm) cover to top bar reinforcement for bridge decks on interstate routes, state routes and routes with design year ADT equal to or greater than 2000.**
3. Specify 2 ½" (65 mm) cover to top bar reinforcement for bridge decks on all other routes.

For cast-in-place decks south of the fall line:

1. Specify Class AA concrete except for post-tensioned concrete boxes which shall have Class AA as a minimum, but may require a higher 28-day strength.
2. Specify 2 ¼" (60 mm) cover to top bar reinforcement for bridge decks on interstate routes, state routes and routes with design year ADT equal to or greater than 2000.
3. Specify 2" (50 mm) cover to top bar reinforcement for bridge decks on all other routes.

For bridge decks of precast concrete elements, specify 2" cover to top bar reinforcement statewide.

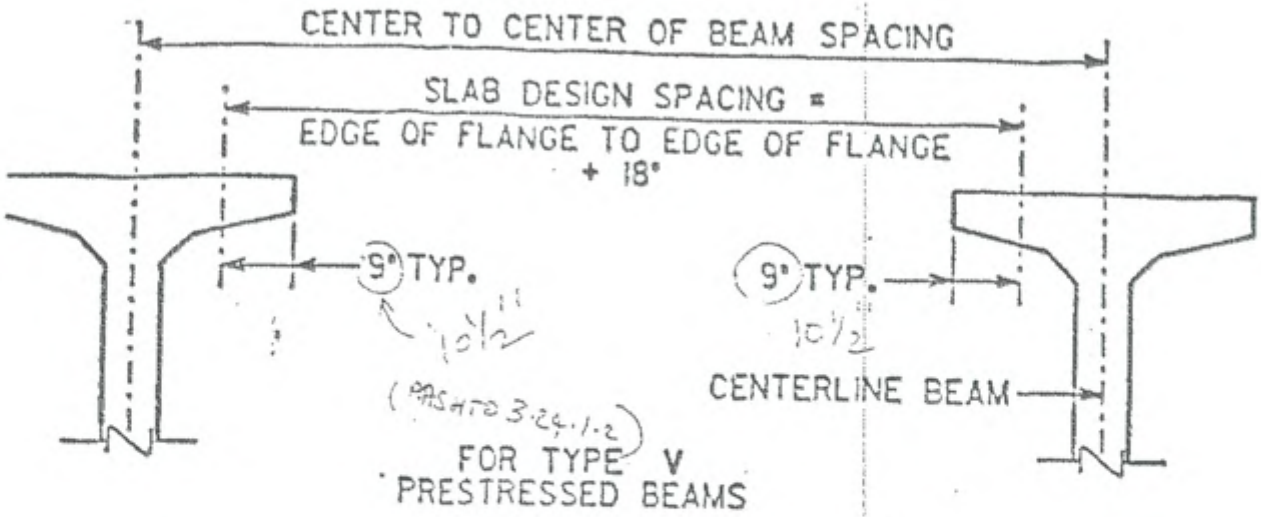
Note that ¼" of concrete thickness may be planed off of the top of cast-in-place decks on interstate routes, state routes and routes with design year ADT equal to or greater than 2000. Therefore, reduce slab thickness accordingly for strength calculations of composite slabs on steel or PSC beams and post-tensioned boxes.

Deck slabs shall be designed by the Service Load method with f_c = 1400 psi (10 MPa), as a rule.

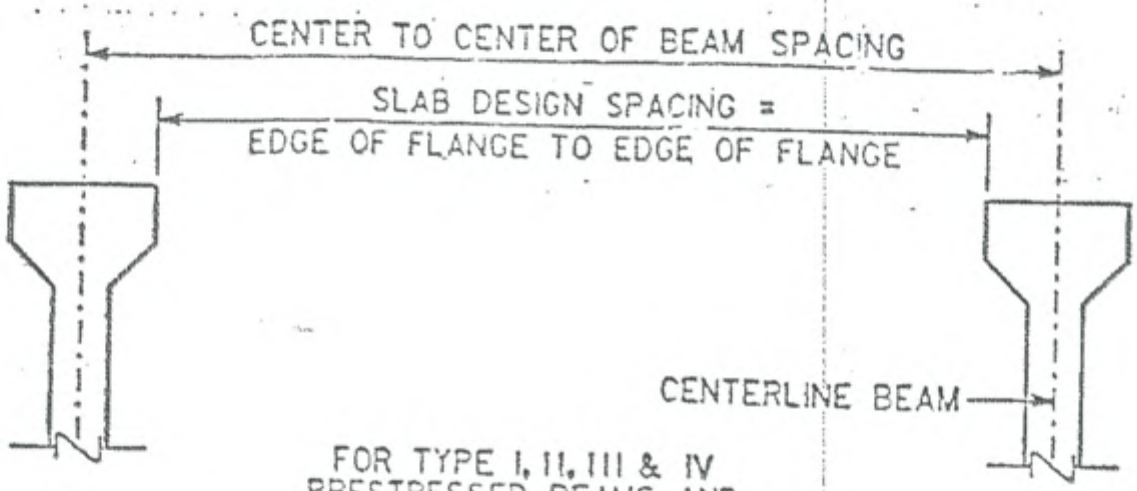
The minimum 28 day strength (f'_c) for the deck concrete shall be 3500 psi (25 MPa). Slabs shall be designed so that the main slab reinforcement is the same in the bottom of the slab as in the top. To achieve this, the effective depth shall be taken as the distance from the bottom of the slab to the centroid of the top main reinforcing steel for both positive and negative moment. Positive and negative moments shall be assumed to be equal and shall be calculated in accordance with the AASHTO Specifications.

See Fig. 4-01 for a location map of the fall line for Georgia.

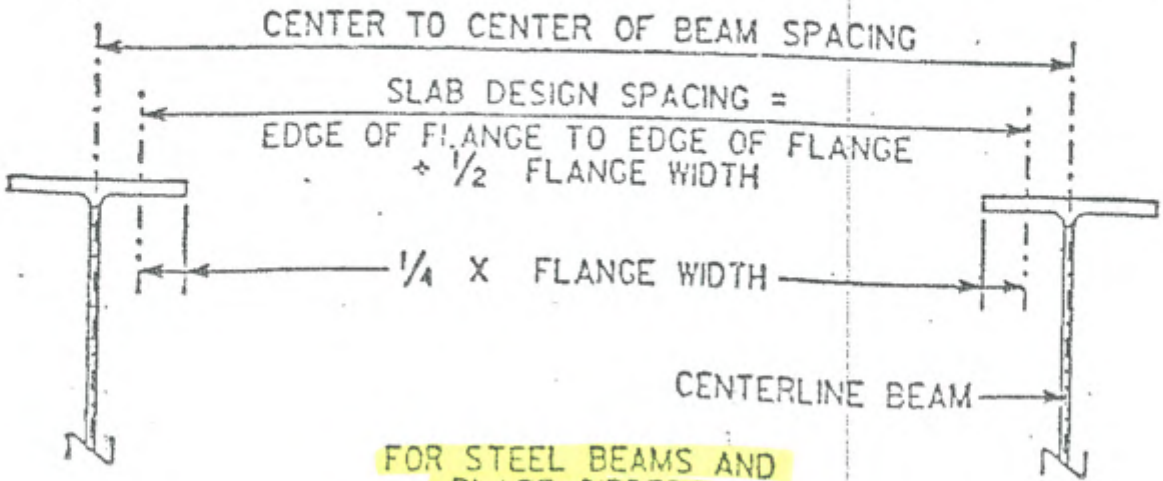
FALL LINE MAP
Figure 4-01



FOR TYPE V
PRESTRESSED BEAMS



FOR TYPE I, II, III & IV
PRESTRESSED BEAMS AND
CONCRETE T-BEAMS



FOR STEEL BEAMS AND
PLATE GIRDERS

FIG. NO. 1 (cont'd)

CALCULATION COVER SHEET

PROJECT	JOB NO.	CALC NO.	SHEET
I-75 / I-575 NORTHWEST CORRIDOR	NH000-0073-03(242)	BR#31	1
SUBJECT	DISCIPLINE		
Beam Design Input	STRUCTURAL		

CALCULATION STATUS DESIGNATION	PRELIMINARY	CONFIRMED	SUPSEDED	VOIDED	INCOMPLETE
	☐	☐	☐	☐	X

COMPUTER PROGRAM/TYPE	SCP	MAINFRAME	PC	PROGRAM	VERSION/RELEASE NO.
	(X) YES ( ) NO	( )	(X)	Excel	2003

Note 1: Georgia Department of Transportation (GDOT) terminated Contract Number TOURDPPI60072 for its convenience prior the completion of all work under that contract and directed that the work with respect to these calculations be discontinued.
(a) These calculations were not completed at the time of GDOT's direction and the information contained herein is not complete and/or has not been fully verified or checked. These calculations are a work-in-progress and are presented only as such.
(b) Any user is cautioned that the use of these calculations and any related information or calculations, without access to factors and without proper regard for their purpose, could lead to erroneous conclusions.
(c) If any such calculations or any information contained herein is used in future work efforts or any follow on design work activity, a complete confirmation of the information contained herein should be performed prior to any such use.
(d) GTP has no responsibility for the use of this information not under its direct control.

Beam Design Input calculations are included for span 1, and spans 2&3 (beams 1, 3 & 5).

NO.	REASON FOR REVISION	TOTAL NO. OF SHEETS	LAST SHEET NO.	BY	CHECKED	APPROVED/ ACCEPTED	DATE
A	As per GDOT's termination for convenience direction	9	9	JCR			11/30/09

RECORD OF REVISIONS

CALCULATION SHEET

PROJECT: I-75 / I-575 NORTHWEST CORRIDOR
JOB NUMBER NH000-0073-03(242)
CALC NO. BR#31

SUBJECT: Beam Design Input - Span 1 SHEET NO.
BY: JCR DATE: 11/30/2009 SHEET REV.

Sufficient sample calculations representative of the scope and conditions in the design calculation were performed and the results compared to demonstrate the computer program adequacy.

BRIDGE: **I-75 over Noonday Creek**
COUNTY: **COBB**
P.I. NO: **713640**
PROJECT: **NH000-0575-01(028)**

J.B. TRIMBLE, INC.

JBT

PJC 10-21-09

JOB NO: **31-6036**
DESIGNED BY: **SHG**
DATE: **10/16/2009**

SPAN 1

Beam Type Plate Girder

'D' DIMENSION = 9.75 IN (9.25)

MIN. COPING DEPTH = 0.375 IN

AASHTO 8.10.1.1 - Compression Flange Width

wBM FLANGE =	12.00	in.
b = Bm Spacing =	**90.00**	**in. CONTROLS**
b = ¼ Span Length =	234.75	in.
b = WBM FLANGE + 2[6 tSLAB] =	106.50	in.

BRIDGE GEOMETRY INPUT:

LARGER BEAM SPACING	7.500	FT
SMALLER BEAM SPACING	7.500	FT
SKEW ANGLE	90.00	DEGREES
SLAB:		
'D' DIMENSION	9.75	IN
DESIGN SLAB DEPTH	7.875	IN
COPING WIDTH	1.000	FT
COPING DEPTH	1.125	IN
SLAB & COPING WEIGHT	**0.752**	KIP/FT
SIP FORMWORK	**0.104**	KIP/FT
DECK OVERLAY		
AVERAGE THICKNESS	0.250	IN
DECK OVERLAY WEIGHT	**0.023**	KIP/FT
ROADWAY WIDTH	44.250	FT
FUTURE WEARING SURFACE	**0.266**	KIP/FT
UTILITIES		
GAS MAIN (not added to W_{DLC})	**0.00**	KIP/FT
TLPHONE CONDUITS (not added to W_{DL}	**0.00**	KIP/FT
WATER MAIN	**0.00**	KIP/FT
EDGE BEAM:		
DEPTH (from top of slab)	2.31	FT
WIDTH	1.000	FT
EDGE BM. WEIGHT	**1.863**	KIP
DIAPHRAGM:		
Plate (3/8" X 5" X 2'-8")	0.017	KIP
CHANNEL (MC 18" X 42.7")	0.043	KIP/FT
DIAPH. WEIGHT	**0.353**	KIP
END WALL: FIX		
DEPTH (from top of slab)	5.063	FT
WIDTH	0.667	FT
PAVING NOTCH WIDTH	0.667	FT
AVG. PAVING NOTCH DEPTH	0.833	FT
END WALL WEIGHT	**3.932**	KIP
PARAPET:		
SW, PAR., FENCE, & MEDIAN WEIGHT	1.900	KIP/FT
NUMBER OF BEAMS	5	
PARAPET WEIGHT	**0.380**	KIP/FT
SIDEWALK LIVE LOAD:		
SIDEWALK WIDTH	0	FT
SIDEWALK LOAD	0.060	KIP/FT^2
NUMBER OF BEAMS	5	
SIDEWALK LIVE LOAD PER BEAM	0.000	KIP/FT

DEAD LOAD CALCULATION:

			REACTION (K)	MOMENT (K-FT)
SPAN LENGTH	78.25	FT		
BEAM WEIGHT	0.178	KLF		
TOTAL DL	1.703	KIP/LF	66.621	1303.280
P-LOADS:				
TYPE	LOAD (K)	POSITION (FT)		
END WALL:	3.932	0.00	3.932	0.000
DIAPHRAGM:	0.353	19.5625	0.265	5.181
DIAPHRAGM:	0.353	39.125	0.177	6.907
DIAPHRAGM:	0.353	58.6875	0.088	5.181
EDGE BEAM:	1.863	78.25	0.000	0.000

	REACTION (K)	MOMENT (K-FT)
TOTAL DL :	**71.1**	**1320.5**

LIVE LOAD CALCULATION:

BEAM DISTRIBUTION

	MOMENT	1.364	WHEEL	VERIFY !!!!	
		0.682	AXLE		
	SHEAR	1.667	WHEEL	VERIFY !!!!	
		0.833	AXLE		
IMPACT FACTOR		1.246			
HS 20 LOADING:	MIDSPAN:	1128.5	KIP-FT		
	MAX:	1133.5	KIP-FT		
HS 20 REACTION:				R x DF x I	
	TRUCK	63.41	KIP	59.91	KIP
	LANE	51.04	KIP	48.27	KIP

	REACTION (K)	MOMENT (K-FT)
TOTAL LL+ I:	**59.9**	**958.7**
MAX TOTAL LL+ I:		**963.0**

	REACTION (K)	MOMENT (K-FT)
TOTAL D.L. + L.L =	**131.0**	**2279.3**

DEFLECTIONS CALCULATION:

NO. LANES	3		
NO. BEAMS	5		
REDUCTION FACTOR	0.90	FACTOR	1.080

SIMPLE SPAN PROGRAM INPUT:

LENGTH =	**78.25**	**FT**
Moment Dist. Factor (DFM) =	**1.364**	
End Shear Dist. Factor (DFV) =	**1.667**	
LL Deflection Dist. Factor (DFD) =	**1.080**	
Non- Composite DL (W_{DLNC}) =	**0.880**	**KLF**
Composite DL (W_{DLC}) =	**0.646**	**KLF W/ F.W.S.**
Sidewalk LL (W_{swK}) =	**0.000**	**KLF**
Effective Concrete Width (W_f) =	**90.000**	**IN**
Concrete Slab Thickness (T_f) =	**7.875**	**IN**
Minimum Coping (Df) =	**0.750**	**IN**
P-LOADS:		
XP1	**0.00**	**FT**
P1	**3.932**	**K**
XP2	**19.5625**	**FT**
P2	**0.353**	**K**
XP3	**39.125**	**FT**
P3	**0.353**	**K**
XP4	**58.6875**	**FT**
P4	**0.353**	**K**
XP5	**78.250**	**FT**
P5	**1.863**	**K**

CALCULATION SHEET

PROJECT: I-75 / I-575 NORTHWEST CORRIDOR
JOB NUMBER NH000-0073-03(242)
CALC NO. BR#31

SUBJECT: Beam Design Input - Spans 2&3 (beam 1) SHEET NO.
BY: JCR DATE: 11/30/2009 SHEET REV.

Sufficient sample calculations representative of the scope and conditions in the design calculation were performed and the results compared to demonstrate the computer program adequacy.

BRIDGE: **I-75 over Noonday Creek**
COUNTY: **COBB**
P.I. NO: **713640**
PROJECT: **NH000-0575-01(028)**

J.B. TRIMBLE, INC.

JOB NO: **31-6036**
DESIGNED BY: **SHG**
DATE: **10/16/2009**

PSC 10-21-09

SPANS 2 & 3 (Beam 1)

Beam Type: Exterior Plate Girder

'D' DIMENSION =	10.875	IN
MIN. COPING DEPTH =	0.375	IN

AASHTO 8.10.1.1 - Compression Flange Width

wBM FLANGE =	10.00	in.
b = Bm Spacing =	**102.00**	**in. CONTROLS**
b = ¼ Span Length =	303.75	in.
b = WBM FLANGE + 2[6 tSLAB] =	109.00	in.

BRIDGE GEOMETRY INPUT:

LARGER BEAM SPACING	8.500	FT
SMALLER BEAM SPACING	8.500	FT
SKEW ANGLE	64.00	DEGREES
SLAB:		
'D' DIMENSION	10.875	IN
DESIGN SLAB DEPTH	8.250	IN
COPING WIDTH	0.833	FT
COPING DEPTH	1.5	IN
SLAB & COPING WEIGHT	**0.892**	KIP/FT
SIP FORMWORK	**0.123**	KIP/FT
DECK OVERLAY		
AVERAGE THICKNESS	0.250	IN
DECK OVERLAY WEIGHT	**0.027**	KIP/FT
ROADWAY WIDTH	48.000	FT
FUTURE WEARING SURFACE	**0.288**	KIP/FT
UTILITIES		
GAS MAIN (not added to W_{DLC})	**0.00**	KIP/FT
TLPHONE CONDUITS (not added to W_{DL}	**0.00**	KIP/FT
WATER MAIN	**0.00**	KIP/FT
EDGE BEAM:		
DEPTH (from top of slab)	2.41	FT
WIDTH	1.000	FT
EDGE BM. WEIGHT	**2.438**	KIP
DIAPHRAGM:		
Plate (3/8" X 5" X 2'-8")	0.017	KIP
CHANNEL (MC 18" X 42.7")	0.043	KIP/FT
DIAPH. WEIGHT	**0.395**	KIP
END WALL: FIX		
DEPTH (from top of slab)	5.156	FT
WIDTH	0.667	FT
PAVING NOTCH WIDTH	0.667	FT
AVG. PAVING NOTCH DEPTH	0.833	FT
END WALL WEIGHT	**5.017**	KIP
PARAPET:		
SW, PAR., FENCE, & MEDIAN WEIGHT	1.900	KIP/FT
NUMBER OF BEAMS	5	
PARAPET WEIGHT	**0.380**	KIP/FT
SIDEWALK LIVE LOAD:		
SIDEWALK WIDTH	0	FT
SIDEWALK LOAD	0.066	KIP/FT^2
NUMBER OF BEAMS	5	
SIDEWALK LIVE LOAD PER BEAM	0.000	KIP/FT

DEAD LOAD CALCULATION:

			REACTION (K)	MOMENT (K-FT)
SPAN LENGTH	101.25	FT		
BEAM WEIGHT	0.230	KLF		
TOTAL DL	1.939	KIP/LF	98.183	2485.256
P-LOADS:				
TYPE	LOAD (K)	POSITION (FT)		
END WALL:	5.017	0.00	5.017	0.000
DIAPHRAGM:	0.395	20.25	0.316	6.395
DIAPHRAGM:	0.395	40.50	0.237	9.592
DIAPHRAGM:	0.395	60.75	0.158	9.592
DIAPHRAGM:	0.395	81.00	0.079	6.395
EDGE BEAM:	2.438	101.25	0.000	0.000

	REACTION (K)	MOMENT (K-FT)
TOTAL DL :	**104.0**	**2517.2**

LIVE LOAD CALCULATION:

BEAM DISTRIBUTION

	MOMENT	1.545	WHEEL	VERIFY !!!
		0.773	AXLE	
	SHEAR	1.824	WHEEL	VERIFY !!!
		0.912	AXLE	
IMPACT FACTOR		1.221		
HS 20 LOADING:	MIDSPAN:	1542.5	KIP-FT	
	MAX:	1546.4	KIP-FT	

HS 20 REACTION:				R x DF x I	
	TRUCK	65.36	KIP	67.10	KIP
	LANE	58.40	KIP	59.51	KIP

	REACTION (K)	MOMENT (K-FT)
TOTAL LL+ I:	**67.1**	**1455.3**
MAX TOTAL LL+ I:		**1459.0**

	REACTION (K)	MOMENT (K-FT)
TOTAL D.L. + L.L =	**171.1**	**3972.6**

DEFLECTIONS CALCULATION:

NO. LANES	3		
NO. BEAMS	5		
REDUCTION FACTOR	0.90	FACTOR	1.080

SIMPLE SPAN PROGRAM INPUT:

LENGTH =	**101.25**	**FT**
Moment Dist. Factor (DFM) =	**1.545**	
End Shear Dist. Factor (DFV) =	**1.824**	
LL Deflection Dist. Factor (DFD) =	**1.080**	
Non- Composite DL (W_{DLNC}) =	**1.041**	**KLF**
Composite DL (W_{DLC}) =	**0.668**	**KLF W/ F.W.S.**
Sidewalk LL (W_{walk}) =	**0.000**	**KLF**
Effective Concrete Width (W_d) =	**102.000**	**IN**
Concrete Slab Thickness (T_d) =	**8.250**	**IN**
Minimum Coping (Df) =	**0.750**	**IN**

P-LOADS:

XP1	**0.00**	**FT**
P1	**5.017**	**K**
XP2	**20.250**	**FT**
P2	**0.395**	**K**
XP3	**40.500**	**FT**
P3	**0.395**	**K**
XP4	**60.750**	**FT**
P4	**0.395**	**K**
XP5	**81.000**	**FT**
P5	**0.395**	**K**
XP6	**101.250**	**FT**
P6	**2.438**	**K**

CALCULATION SHEET

PROJECT: I-75 / I-575 NORTHWEST CORRIDOR
JOB NUMBER NH000-0073-03(242)
CALC NO. BR#31

SUBJECT: Beam Design Input - Spans 2&3 (beam 3) SHEET NO.
BY: JCR DATE: 11/30/2009 SHEET REV.

Sufficient sample calculations representative of the scope and conditions in the design calculation were performed and the results compared to demonstrate the computer program adequacy.

BRIDGE: **I-75 over Noonday Creek**
COUNTY: **COBB**
P.I. NO: **713640**
PROJECT: **NH000-0575-01(028)**

J.B. TRIMBLE, INC.

JBT

JOB NO: **31-6036**
DESIGNED BY: **SHG**
DATE: **10/16/2009**

PJC 10-21-09

SPANS 2 & 3 (Beam 3)

Beam Type: Interior Plate Girder

'D' DIMENSION =	10.875	IN
MIN. COPING DEPTH =	0.375	IN

9.875

AASHTO 8.10.1.1 - Compression Flange Width

wBM FLANGE =	12.00	in.
b = Bm Spacing =	**102.00**	**in. CONTROLS**
b = ¼ Span Length =	279.75	in.
b = WBM FLANGE + 2[6 tSLAB] =	111.00	in.

BRIDGE GEOMETRY INPUT:

LARGER BEAM SPACING	8.500	FT
SMALLER BEAM SPACING	8.500	FT
SKEW ANGLE	64.00	DEGREES
SLAB:		
'D' DIMENSION	10.875	IN
DESIGN SLAB DEPTH	8.250	IN
COPING WIDTH	1.000	FT
COPING DEPTH	1.5	IN
SLAB & COPING WEIGHT	**0.895**	KIP/FT
SIP FORMWORK	**0.120**	KIP/FT
DECK OVERLAY		
AVERAGE THICKNESS	0.250	IN
DECK OVERLAY WEIGHT	**0.027**	KIP/FT
ROADWAY WIDTH	48.000	FT
FUTURE WEARING SURFACE	**0.288**	KIP/FT
UTILITIES		
GAS MAIN (not added to W_{DLC})	**0.00**	KIP/FT
TLPHONE CONDUITS (not added to W_{DL}	**0.00**	KIP/FT
WATER MAIN	**0.00**	KIP/FT
EDGE BEAM:		
DEPTH (from top of slab)	2.41	FT
WIDTH	1.000	FT
EDGE BM. WEIGHT	**2.438**	KIP
DIAPHRAGM:		
Plate (3/8" X 5" X 2'-8")	0.017	KIP
CHANNEL (MC 18" X 42.7")	0.043	KIP/FT
DIAPH. WEIGHT	**0.395**	KIP
END WALL: FIX		
DEPTH (from top of slab)	5.156	FT
WIDTH	0.667	FT
PAVING NOTCH WIDTH	0.667	FT
AVG. PAVING NOTCH DEPTH	0.833	FT
END WALL WEIGHT	**5.017**	KIP
PARAPET:		
SW, PAR., FENCE, & MEDIAN WEIGHT	1.900	KIP/FT
NUMBER OF BEAMS	5	
PARAPET WEIGHT	**0.380**	KIP/FT
SIDEWALK LIVE LOAD:		
SIDEWALK WIDTH	0	FT
SIDEWALK LOAD	0.060	KIP/FT^2
NUMBER OF BEAMS	5	
SIDEWALK LIVE LOAD PER BEAM	0.000	KIP/FT

DEAD LOAD CALCULATION:

			REACTION (K)	MOMENT (K-FT)
SPAN LENGTH	93.25	FT		
BEAM WEIGHT	0.215	KLF		
TOTAL DL	1.925	KIP/LF	89.747	2092.234
P-LOADS:				
TYPE	LOAD (K)	POSITION (FT)		
END WALL:	5.017	0.00	5.017	0.000
DIAPHRAGM:	0.395	18.65	0.316	5.889
DIAPHRAGM:	0.395	37.30	0.237	8.834
DIAPHRAGM:	0.395	55.95	0.158	8.834
DIAPHRAGM:	0.395	74.60	0.079	5.889
EDGE BEAM:	2.438	93.25	0.000	0.000

	REACTION (K)	MOMENT (K-FT)
TOTAL DL :	**95.6**	**2121.7**

LIVE LOAD CALCULATION:

BEAM DISTRIBUTION

MOMENT	1.545	WHEEL	VERIFY !!!	
	0.773	AXLE		
SHEAR	1.824	WHEEL	VERIFY !!!	
	0.912	AXLE		
IMPACT FACTOR	1.229			
HS 20 LOADING: MIDSPAN:	1398.5	KIP-FT		
MAX:	1402.7	KIP-FT		
HS 20 REACTION:			R x DF x I	
TRUCK	64.79	KIP	67.01	KIP
LANE	55.84	KIP	57.48	KIP

	REACTION (K)	MOMENT (K-FT)
TOTAL LL+ I:	**67.0**	**1328.2**
MAX TOTAL LL+ I:		**1332.2**

	REACTION (K)	MOMENT (K-FT)
TOTAL D.L. + L.L =	**162.6**	**3449.9**

DEFLECTIONS CALCULATION:

NO. LANES	3		
NO. BEAMS	5		
REDUCTION FACTOR	0.90	FACTOR	1.080

SIMPLE SPAN PROGRAM INPUT:

LENGTH =	**93.25**	**FT**
Moment Dist. Factor (DFM) =	**1.545**	
End Shear Dist. Factor (DFV) =	**1.824**	
LL Deflection Dist. Factor (DFD) =	**1.080**	
Non- Composite DL (W_{DLNC}) =	**1.042**	**KLF**
Composite DL (W_{DLC}) =	**0.668**	**KLF W/ F.W.S.**
Sidewalk LL (W_{swk}) =	**0.000**	**KLF**
Effective Concrete Width (W_t) =	**102.000**	**IN**
Concrete Slab Thickness (T_t) =	**8.250**	**IN**
Minimum Coping (Df) =	**0.750**	**IN**

P-LOADS:

XP1	0.00	FT
P1	5.017	K
XP2	18.650	FT
P2	0.395	K
XP3	37.300	FT
P3	0.395	K
XP4	55.950	FT
P4	0.395	K
XP5	74.600	FT
P5	0.395	K
XP6	93.250	FT
P6	2.438	K

CALCULATION SHEET

PROJECT: I-75 / I-575 NORTHWEST CORRIDOR
JOB NUMBER NH000-0073-03(242)
CALC NO. BR#31

SUBJECT: Beam Design Input - Spans 2&3 (beam 5) SHEET NO.
BY: JCR DATE: 11/30/2009 SHEET REV.

Sufficient sample calculations representative of the scope and conditions in the design calculation were performed and the results compared to demonstrate the computer program adequacy.

BRIDGE: **I-75 over Noonday Creek**
COUNTY: **COBB**
P.I. NO: **713640**
PROJECT: **NH000-0575-01(028)**

J.B. TRIMBLE, INC.

JOB NO: **31-6036**
DESIGNED BY: **SHG**
DATE: **10/16/2009**

PIC 10/21/09

SPANS 2 & 3 (Beam 5)

Beam Type: Interior Plate Girder

'D' DIMENSION =	10.625	IN
MIN. COPING DEPTH =	0.375	IN

9.625"

AASHTO 8.10.1.1 - Compression Flange Width		
wBM FLANGE =	12.00	in.
b = Bm Spacing =	102.00	in. CONTROLS
b = ¼ Span Length =	255.75	in.
b = WBM FLANGE + 2[6 tSLAB] =	111.00	in.

BRIDGE GEOMETRY INPUT:

LARGER BEAM SPACING	8.500	FT
SMALLER BEAM SPACING	8.500	FT
SKEW ANGLE	90.00	DEGREES
SLAB:		
'D' DIMENSION	10.625	IN
DESIGN SLAB DEPTH	8.250	IN
COPING WIDTH	1.000	FT
COPING DEPTH	1.375	IN
SLAB & COPING WEIGHT	**0.894**	KIP/FT
SIP FORMWORK	**0.120**	KIP/FT
DECK OVERLAY		
AVERAGE THICKNESS	0.250	IN
DECK OVERLAY WEIGHT	**0.027**	KIP/FT
ROADWAY WIDTH	48.000	FT
FUTURE WEARING SURFACE	**0.288**	KIP/FT
UTILITIES		
GAS MAIN (not added to W_{DLC})	**0.00**	KIP/FT
TLPHONE CONDUITS (not added to W_{DL}	**0.00**	KIP/FT
WATER MAIN	**0.00**	KIP/FT
EDGE BEAM:		
DEPTH (from top of slab)	2.39	FT
WIDTH	1.000	FT
EDGE BM. WEIGHT	**2.165**	KIP
DIAPHRAGM:		
Plate (3/8" X 5" X 2'-8")	0.017	KIP
CHANNEL (MC 18" X 42.7")	0.043	KIP/FT
DIAPH. WEIGHT	**0.396**	KIP
PARAPET:		
SW, PAR., FENCE, & MEDIAN WEIGHT	1.900	KIP/FT
NUMBER OF BEAMS	5	
PARAPET WEIGHT	**0.380**	KIP/FT
SIDEWALK LIVE LOAD:		
SIDEWALK WIDTH	0	FT
SIDEWALK LOAD	0.060	KIP/FT^2
NUMBER OF BEAMS	5	
SIDEWALK LIVE LOAD PER BEAM	0.000	KIP/FT

DEAD LOAD CALCULATION:

			REACTION (K)	MOMENT (K-FT)
SPAN LENGTH	85.25	FT		
BEAM WEIGHT	0.194	KLF		
TOTAL DL	1.902	KIP/LF	81.086	1728.147
P-LOADS:				
TYPE	LOAD (K)	POSITION (FT)		
EDGE BEAM:	2.165	0.00	2.165	0.000
DIAPHRAGM:	0.396	21.313	0.297	6.327
DIAPHRAGM:	0.396	42.625	0.198	8.435
DIAPHRAGM:	0.396	63.938	0.099	6.327
EDGE BEAM:	2.165	85.25	0.000	0.000

	REACTION (K)	MOMENT (K-FT)
TOTAL DL :	**83.8**	**1749.2**

LIVE LOAD CALCULATION:

BEAM DISTRIBUTION

MOMENT	1.545	WHEEL	VERIFY !!!!	
	0.773	AXLE		
SHEAR	1.824	WHEEL	VERIFY !!!!	
	0.912	AXLE		
IMPACT FACTOR	1.238			
HS 20 LOADING: MIDSPAN:	1254.5	KIP-FT		
MAX:	1259.1	KIP-FT		

HS 20 REACTION:			R x DF x I	
TRUCK	64.12	KIP	66.83	KIP
LANE	53.28	KIP	55.44	KIP

	REACTION (K)	MOMENT (K-FT)
TOTAL LL+ I:	**66.8**	**1199.9**
MAX TOTAL LL+ I:		**1204.3**

	REACTION (K)	MOMENT (K-FT)
TOTAL D.L. + L.L =	**150.7**	**2949.2**

DEFLECTIONS CALCULATION:

NO. LANES	3		
NO. BEAMS	5		
REDUCTION FACTOR	0.90	FACTOR	1.080

SIMPLE SPAN PROGRAM INPUT:

LENGTH =	**85.25**	**FT**
Moment Dist. Factor (DFM) =	**1.545**	
End Shear Dist. Factor (DFV) =	**1.824**	
LL Deflection Dist. Factor (DFD) =	**1.080**	
Non- Composite DL (W_{DLNC}) =	**1.040**	**KLF**
Composite DL (W_{DLC}) =	**0.668**	**KLF W/ F.W.S.**
Sidewalk LL (W_{swk}) =	**0.000**	**KLF**
Effective Concrete Width (W_d) =	**102.00**	**IN**
Concrete Slab Thickness (T_d) =	**8.250**	**IN**
Minimum Coping (Df) =	**0.750**	**IN**
P-LOADS:		
XP1	**0.00**	**FT**
P1	**2.165**	**K**
XP2	**21.313**	**FT**
P2	**0.396**	**K**
XP3	**42.625**	**FT**
P3	**0.396**	**K**
XP4	**63.938**	**FT**
P4	**0.396**	**K**
XP5	**85.250**	**FT**
P5	**2.165**	**K**

CALCULATION COVER SHEET

PROJECT	JOB NO.	CALC NO.	SHEET
I-75 / I-575 NORTHWEST CORRIDOR	NH000-0073-03(242)	BR#31	1
SUBJECT	DISCIPLINE		
Beam Design Output	STRUCTURAL		

CALCULATION STATUS DESIGNATION	PRELIMINARY	CONFIRMED	SUPSEDED	VOIDED	INCOMPLETE
	☐	☐	☐	☐	X

COMPUTER PROGRAM/TYPE	SCP	MAINFRAME	PC	PROGRAM	VERSION/RELEASE NO.
	(X) YES ( ) NO	( )	(X)	GDOT BRSPAN	06/26/2008

Note 1: Georgia Department of Transportation (GDOT) terminated Contract Number TOURDPPI60072 for its convenience the completion of all work under that contract and directed that the work with respect to these calculations be discontinued.
(a) These calculations were not completed at the time of GDOT's direction and the information contained herein is not and/or has not been fully verified or checked. These calculations are a work-in-progress and are presented only as such.
(b) Any user is cautioned that the use of these calculations and any related information or calculations, without access to factors and without proper regard for their purpose, could lead to erroneous conclusions.
(c) If any such calculations or any information contained herein is used in future work efforts or any follow on design work a complete confirmation of the information contained herein should be performed prior to any such use.
(d) GTP has no responsibility for the use of this information not under its direct control.

Beam design ouptput is included for span 1, and spans 2&3 (beams 1, 3 & 5).

NO.	REASON FOR REVISION	TOTAL NO. OF SHEETS	LAST SHEET NO.	BY	CHECKED	APPROVED/ ACCEPTED	DATE
A	As per GDOT's termination for convenience direction	17	17	JCR			11/30/09

RECORD OF REVISIONS

CALCULATION SHEET

PROJECT: I-75 / I-575 NORTHWEST CORRIDOR
JOB NUMBER NH000-0073-03(242)
CALC NO. BR#31

SUBJECT: Beam Design Output - Span 1 SHEET NO.
BY: JCR DATE: 11/30/2009 SHEET REV.

Sufficient sample calculations representative of the scope and conditions in the design calculation were performed and the results compared to demonstrate the computer program adequacy.

16-OCT-09 GEORGIA DEPARTMENT OF TRANSPORTATION PROB. NO. S2NW
11:34:01 PRECONSTUCTION DIVISION - OFFICE OF BRIDGE & STRUCTURAL DESIGN
SIMPLE SPAN
REVISED: JUNE 26, 2008

PSC 12-21-09

I-75 OVER NOONDAY CREEK - SPAN 1

SPAN DATA

BEAM	D/A	L.L.C.	T L M	LENGTH	D.F.M.	D.F.V.	D.F.D.	NPL
CG	1	HS20	0 0 0	78.250	1.364	1.667	1.080	5

WDLNC	WDLC	SWLL	E	W BM	FS	FC	WG	TYPE STEEL
0.880	0.646	0.000	29.00	0.000	27.00	1.400	0.490	572

CONCENTRATED LOADS

X1	P1	X2	P2	X3	P3	X4	P4
0.000	3.932	19.563	0.353	39.125	0.353	58.688	0.353
78.250	1.863	0.000	0.000	0.000	0.000	0.000	0.000

BEAM DATA

ROLLED BEAM	P	NP	SECTION PROPERTIES I	Y TOP	Y BOT	PLATE GIRDER WEB D	T	TOP FLANGE W	T	BOTTOM FLANGE W	T
0WF	0	0 0	0.0	0.000	0.000	48.00	0.6250	12.00	0.7500	12.00	1.0000
0WF	0										

COMPOSITE SLAB

WIDTH	THICKNESS	COPING	SHEAR CAPACITY	ULTIMATE STRENGTH	N=ES/EC
90.000	7.875	0.000	12.38 K/ROW	25.21 KIPS EACH	9

BOTTOM COVER X-BEGIN	THICKNESS	PLATE WIDTH	LENGTH	TOP COVER X-BEGIN	THICKNESS	PLATE WIDTH	LENGTH	CONSTANT W	T
20.25	1.2500	12.00	37.75	0.00	0.0000	0.00	0.00	0	0

PLATE GIRDER PROPERTIES

WEB DEPTH	THICK	TOP FLANGE WIDTH	THICK	BOTTOM FLANGE WIDTH	THICK	WEB AND FLANGES PROPERTIES AREA	Y-TOP	Y-BOTTOM	I
48.00	0.6250	12.00	0.7500	12.00	1.0000	51.000	26.213	23.537	18202.5

WEB AND COVER PLATES

BOTTOM COVER X-BEGIN	THICKNESS	PLATE WIDTH	LENGTH	TOP COVER X-BEGIN	THICKNESS	PLATE WIDTH	LENGTH
20.25	1.2500	12.00	37.75	0.00	0.7500	12.00	0.00

WEB WITH COVER PLATES PROPERTIES

AREA	Y-TOP	Y-BOTTOM	I
54.000	27.528	22.472	19788.8

COMPOSITE SECTION PROPERTIES

	WEB AND FLANGES					WEB AND PLATES				
N	YTC	YTS	YBS	I	Q SLAB	YTC	YTS	YBS	I	Q SLAB
9	15.79	7.91	41.84	46748.5	933.3	16.74	8.86	41.14	51911.4	1008.0
27	23.84	15.97	33.78	34092.4		25.11	17.24	32.76	37412.5	

NUMBER OF SHEAR CONNECTORS NEEDED TO PROVIDE FOR ULTIMATE STRENGTH 197

NUMBER OF LONGITUDINAL STIFFENERS NEEDED 0

TRANSVERSE STIFFENERS NOT REQUIRED

SIMPLE SPAN OUTPUT DATA PROBLEM NUMBER S2NW

MOMENTS (K-FT.) AT SPAN 1/20 POINTS

SP	GIRDER	P-LOAD	NON-C.	TOT.NC	COMP.	SIDEWK	LIVE LOAD	RR-I
1	26.0	2.1	128.0	156.0	93.9	0.0	198.9 T	0.0
2	49.3	4.1	242.5	295.9	178.0	0.0	373.8 T	0.0
3	70.0	6.2	343.5	419.7	252.2	0.0	524.8 T	0.0
4	88.0	8.3	431.1	527.4	316.4	0.0	651.8 T	0.0
5	103.4	10.4	505.2	618.9	370.8	0.0	754.9 T	0.0
6	116.0	11.0	565.8	692.9	415.3	0.0	834.1 T	0.0
7	125.9	11.7	612.9	750.5	449.9	0.0	894.1 T	0.0
8	132.9	12.4	646.6	791.9	474.7	0.0	939.6 T	0.0
9	137.1	13.1	666.8	817.1	489.5	0.0	961.3 T	0.0
10	138.5	13.8	673.5	825.9	494.4	0.0	959.0 T	0.0

STRESS (PSI) AT SPAN 1/20 POINTS

	MINIMUM STRESS		MAXIMUM STRESS			ALLOWABLE	R FACTOR	
SP	TOP-S	BOT-S	TOP-C	TOP-S	BOT-S	FS	TOP-S	BOT-S
1	3224	-3538	118	3628	-5673	27000	0.889	0.624
2	6114	-6708	223	6873	-10722	27000	0.890	0.626
3	8670	-9511	314	9736	-15146	27000	0.891	0.628
4	10892	-11945	391	12216	-18945	27000	0.892	0.631
5	12779	-14012	455	14312	-22119	27000	0.893	0.633
6	13861	-13806	482	15570	-21738	27000	0.890	0.635
7	15016	-14956	518	16847	-23458	27000	0.891	0.638
8	15843	-15780	545	17768	-24715	27000	0.892	0.638
9	16345	-16278	559	18314	-25419	27000	0.892	0.640
10	16519	-16450	559	18484	-25570	27000	0.894	0.643

SHEARS (KIPS) AT SPAN 1/20 POINTS S2NW

SP	GIRDER	P-LOAD	NON-C.	TOT.NC	COMP.	SIDEWK	LIVE LOAD	RR-I
0	7.0	4.5	34.4	45.9	25.3	0.0	59.9 T	0.0
1	6.3	0.5	31.0	37.8	22.7	0.0	51.0 T	0.0
2	5.6	0.5	27.5	33.7	20.2	0.0	48.1 T	0.0
3	4.9	0.5	24.1	29.6	17.7	0.0	45.2 T	0.0
4	4.3	0.5	20.7	25.5	15.2	0.0	42.3 T	0.0
5	3.6	0.5	17.2	21.3	12.6	0.0	39.4 T	0.0
6	2.9	0.2	13.8	16.8	10.1	0.0	36.4 T	0.0
7	2.2	0.2	10.3	12.7	7.6	0.0	33.5 T	0.0
8	1.4	0.2	6.9	8.5	5.1	0.0	30.5 T	0.0
9	0.7	0.2	3.4	4.3	2.5	0.0	27.4 T	0.0
10	0.0	0.2	0.0	0.2	0.0	0.0	24.3 T	0.0

	DEAD LOAD DEFLECTIONS (INCHES)					SHEAR	
SP	GIRDER	P-LOAD	NON-C.	TOT.NC	COMP.	RANGE(KIPS)	CON.SPAC(IN)
0	0.000	0.000	0.000	0.000	0.000	59.9	10.35
1	0.043	0.004	0.212	0.259	0.083	52.4	11.82
2	0.086	0.008	0.417	0.511	0.163	51.3	12.09
3	0.125	0.012	0.611	0.748	0.238	50.5	12.27
4	0.161	0.015	0.787	0.964	0.306	49.8	12.46
5	0.193	0.018	0.942	1.153	0.367	49.0	12.67
6	0.220	0.021	1.072	1.313	0.417	48.4	13.18
7	0.241	0.023	1.176	1.440	0.458	48.3	13.21
8	0.257	0.024	1.252	1.533	0.487	48.4	13.18
9	0.266	0.025	1.298	1.590	0.505	48.6	13.13
10	0.270	0.026	1.314	1.609	0.511	48.6	13.12

LIVE LOAD DEFLECTIONS (INCHES)

TRUCK	LANE	MILITARY	RAILROAD	SIDEWALK	L/ 800
0.520	0.387	0.373	0.000	0.000	1.174

CALCULATION SHEET

PROJECT: I-75 / I-575 NORTHWEST CORRIDOR
JOB NUMBER NH000-0073-03(242)
CALC NO. BR#31

SUBJECT: Beam Design Output - Spans 2&3 (beam 1) SHEET NO.
BY: JCR DATE: 11/30/2009 SHEET REV.

Sufficient sample calculations representative of the scope and conditions in the design calculation were performed and the results compared to demonstrate the computer program adequacy.

16-OCT-09 GEORGIA DEPARTMENT OF TRANSPORTATION PROB. NO. S2NW
11:44:08 PRECONSTUCTION DIVISION - OFFICE OF BRIDGE & STRUCTURAL DESIGN

PJC 10-21-09

SIMPLE SPAN
REVISED: JUNE 26, 2008

I-75 OVER NOONDAY CREEK - SPANS 2 & 3 (Beam 1)

SPAN DATA

BEAM	D/A	L.L.C.	T	L	M	LENGTH	D.F.M.	D.F.V.	D.F.D.	NPL
CG	1	HS20	0	0	0	101.250	1.545	1.824	1.080	6

WDLNC	WDLC	SWLL	E	W BM	FS	FC	WG	TYPE STEEL
1.041	0.668	0.000	29.00	0.000	27.00	1.400	0.490	572

CONCENTRATED LOADS

X1	P1	X2	P2	X3	P3	X4	P4
0.000	5.017	20.250	0.395	40.500	0.395	60.750	0.395
81.000	0.395	101.250	2.438	0.000	0.000	0.000	0.000

BEAM DATA

ROLLED BEAM	P	NP	SECTION PROPERTIES I	Y TOP	Y BOT	PLATE GIRDER WEB D	T	TOP FLANGE W	T	BOTTOM FLANGE W	T
0WF	0	0	0.0	0.000	0.000	48.00	0.6250	12.00	0.7500	16.00	1.3750
0WF	0										

COMPOSITE SLAB

WIDTH	THICKNESS	COPING	SHEAR CAPACITY	ULTIMATE STRENGTH	N=ES/EC
102.000	8.250	0.000	12.38 K/ROW	25.21 KIPS EACH	9

BOTTOM COVER X-BEGIN	THICKNESS	PLATE WIDTH	LENGTH	TOP COVER X-BEGIN	THICKNESS	PLATE WIDTH	LENGTH	CONSTANT W	T
25.63	2.0000	16.00	50.00	25.63	1.1250	12.00	50.00	0	0

PLATE GIRDER PROPERTIES

WEB DEPTH	THICK	TOP FLANGE WIDTH	THICK	BOTTOM FLANGE WIDTH	THICK	WEB AND FLANGES PROPERTIES AREA	Y-TOP	Y-BOTTOM	I
48.00	0.6250	12.00	0.7500	16.00	1.3750	61.000	30.057	20.068	22801.3

WEB AND COVER PLATES

BOTTOM COVER X-BEGIN	THICKNESS	PLATE WIDTH	LENGTH	TOP COVER X-BEGIN	THICKNESS	PLATE WIDTH	LENGTH
25.63	2.0000	16.00	50.00	25.63	1.1250	12.00	50.00

WEB WITH COVER PLATES PROPERTIES

AREA	Y-TOP	Y-BOTTOM	I
75.500	31.329	19.796	31010.8

COMPOSITE SECTION PROPERTIES

	WEB AND FLANGES					WEB AND PLATES				
N	YTC	YTS	YBS	I	Q SLAB	YTC	YTS	YBS	I	Q SLAB
9	17.77	9.14	40.98	67417.0	1275.7	19.96	11.71	39.41	84046.5	1480.9
27	27.00	18.37	31.75	47611.7		29.22	20.97	30.16	58917.0	

NUMBER OF SHEAR CONNECTORS NEEDED TO PROVIDE FOR ULTIMATE STRENGTH 234

NUMBER OF LONGITUDINAL STIFFENERS NEEDED 0

TRANSVERSE STIFFENERS NOT REQUIRED

SIMPLE SPAN OUTPUT DATA PROBLEM NUMBER S2NW

MOMENTS (K-FT.) AT SPAN 1/20 POINTS

SP	GIRDER	P-LOAD	NON-C.	TOT.NC	COMP.	SIDEWK	LIVE LOAD	RR-I
1	56.8	4.0	253.5	314.2	162.6	0.0	294.9 T	0.0
2	108.2	8.0	480.2	596.5	308.2	0.0	555.5 T	0.0
3	154.4	12.0	680.3	846.7	436.6	0.0	781.6 T	0.0
4	195.2	16.0	853.8	1065.0	547.8	0.0	973.4 T	0.0
5	230.7	18.0	1000.5	1249.2	642.0	0.0	1130.8 T	0.0
6	260.3	20.0	1120.5	1400.9	719.0	0.0	1253.8 T	0.0
7	283.4	22.0	1213.9	1519.3	779.0	0.0	1347.7 T	0.0
8	299.8	24.0	1280.6	1604.5	821.8	0.0	1417.8 T	0.0
9	309.7	24.0	1320.6	1654.4	847.4	0.0	1453.6 T	0.0
10	313.0	24.0	1334.0	1671.0	856.0	0.0	1454.9 T	0.0

STRESS (PSI) AT SPAN 1/20 POINTS

	MINIMUM STRESS		MAXIMUM STRESS			ALLOWABLE	R FACTOR	
SP	TOP-S	BOT-S	TOP-C	TOP-S	BOT-S	FS	TOP-S	BOT-S
1	5723	-4620	144	6203	-6771	27000	0.923	0.682
2	10862	-8765	272	11766	-12817	27000	0.923	0.684
3	15415	-12436	384	16687	-18137	27000	0.924	0.686
4	19383	-15631	480	20967	-22732	27000	0.924	0.688
5	22733	-18331	559	24573	-26579	27000	0.925	0.690
6	20054	-15147	555	22151	-22202	27000	0.905	0.682
7	21745	-16422	598	23999	-24006	27000	0.906	0.684
8	22960	-17337	630	25332	-25316	27000	0.906	0.685
9	23675	-17877	647	26106	-26057	27000	0.907	0.686
10	23913	-18057	649	26347	-26244	27000	0.908	0.688

SHEARS (KIPS) AT SPAN 1/20 POINTS S2NW

SP	GIRDER	P-LOAD	NON-C.	TOT.NC	COMP.	SIDEWK	LIVE LOAD	RR-I
0	11.7	5.8	52.7	70.2	33.8	0.0	67.1 T	0.0
1	10.7	0.8	47.4	58.9	30.4	0.0	58.5 T	0.0
2	9.6	0.8	42.2	52.6	27.1	0.0	55.3 T	0.0
3	8.6	0.8	36.9	46.3	23.7	0.0	52.1 T	0.0
4	7.5	0.8	31.6	39.9	20.3	0.0	48.9 T	0.0
5	6.5	0.4	26.4	33.2	16.9	0.0	45.7 T	0.0
6	5.2	0.4	21.1	26.7	13.5	0.0	42.4 T	0.0
7	3.9	0.4	15.8	20.1	10.1	0.0	39.2 T	0.0
8	2.6	0.4	10.5	13.5	6.8	0.0	35.8 T	0.0
9	1.3	0.0	5.3	6.6	3.4	0.0	32.5 T	0.0
10	0.0	0.0	0.0	0.0	0.0	0.0	29.1 T	0.0

	DEAD LOAD DEFLECTIONS (INCHES)					SHEAR	
SP	GIRDER	P-LOAD	NON-C.	TOT.NC	COMP.	RANGE(KIPS)	CON.SPAC(IN)
0	0.000	0.000	0.000	0.000	0.000	67.1	9.75
1	0.113	0.009	0.487	0.609	0.159	60.1	10.89
2	0.222	0.017	0.958	1.197	0.312	59.2	11.05
3	0.323	0.025	1.396	1.745	0.456	58.4	11.20
4	0.415	0.032	1.789	2.236	0.585	57.6	11.36
5	0.493	0.038	2.125	2.657	0.698	57.3	11.41
6	0.557	0.043	2.401	3.001	0.791	57.5	12.23
7	0.609	0.047	2.621	3.277	0.865	57.8	12.16
8	0.647	0.050	2.782	3.479	0.919	58.1	12.09
9	0.670	0.052	2.879	3.601	0.952	58.2	12.06
10	0.677	0.053	2.912	3.642	0.963	58.3	12.06

LIVE LOAD DEFLECTIONS (INCHES)

TRUCK	LANE	MILITARY	RAILROAD	SIDEWALK	L/ 800
0.718	0.615	0.499	0.000	0.000	1.519

CALCULATION SHEET

PROJECT: I-75 / I-575 NORTHWEST CORRIDOR
JOB NUMBER NH000-0073-03(242)
CALC NO. BR#31

SUBJECT: Beam Design Output - Spans 2&3 (beam 3) SHEET NO.
BY: JCR DATE: 11/30/2009 SHEET REV.

Sufficient sample calculations representative of the scope and conditions in the design calculation were performed and the results compared to demonstrate the computer program adequacy.

16-OCT-09 GEORGIA DEPARTMENT OF TRANSPORTATION PROB. NO. S2NW
11:38:33 PRECONSTUCTION DIVISION - OFFICE OF BRIDGE & STRUCTURAL DESIGN

PJC 10/21/09

SIMPLE SPAN
REVISED: JUNE 26, 2008

I-75 OVER NOONDAY CREEK - SPANS 2 & 3 (Beam 3)

SPAN DATA

BEAM	D/A	L.L.C.	T L M	LENGTH	D.F.M.	D.F.V.	D.F.D.	NPL
CG	1	HS20	0 0 0	93.250	1.545	1.824	1.080	6

WDLNC	WDLC	SWLL	E	W BM	FS	FC	WG	TYPE STEEL
1.042	0.668	0.000	29.00	0.000	27.00	1.400	0.490	572

CONCENTRATED LOADS

X1	P1	X2	P2	X3	P3	X4	P4
0.000	5.017	18.650	0.395	37.300	0.395	55.950	0.395
74.600	0.395	93.250	2.438	0.000	0.000	0.000	0.000

BEAM DATA

ROLLED BEAM	P	NP	SECTION PROPERTIES I	Y TOP	Y BOT	PLATE GIRDER WEB D	T	TOP FLANGE W	T	BOTTOM FLANGE W	T
OWF	0	0 0	0.0	0.000	0.000	48.00	0.6250	12.00	0.7500	14.00	1.3750
OWF	0										

COMPOSITE SLAB

WIDTH	THICKNESS	COPING	SHEAR CAPACITY	ULTIMATE STRENGTH	N=ES/EC
102.000	8.250	0.000	12.38 K/ROW	25.21 KIPS EACH	9

BOTTOM COVER PLATE X-BEGIN	THICKNESS	WIDTH	LENGTH	TOP COVER PLATE X-BEGIN	THICKNESS	WIDTH	LENGTH	CONSTANT W	T
24.21	2.0000	14.00	46.00	24.21	1.0000	12.00	46.00	0	0

PLATE GIRDER PROPERTIES

WEB DEPTH	THICK	TOP FLANGE WIDTH	THICK	BOTTOM FLANGE WIDTH	THICK	WEB AND FLANGES PROPERTIES AREA	Y-TOP	Y-BOTTOM	I
48.00	0.6250	12.00	0.7500	14.00	1.3750	58.250	29.142	20.983	21719.2

WEB AND COVER PLATES

BOTTOM COVER PLATE X-BEGIN	THICKNESS	WIDTH	LENGTH	TOP COVER PLATE X-BEGIN	THICKNESS	WIDTH	LENGTH
24.21	2.0000	14.00	46.00	24.21	1.0000	12.00	46.00

WEB WITH COVER PLATES PROPERTIES

AREA	Y-TOP	Y-BOTTOM	I
70.000	30.800	20.200	28118.5

COMPOSITE SECTION PROPERTIES

	WEB AND FLANGES					WEB AND PLATES				
N	YTC	YTS	YBS	I	Q SLAB	YTC	YTS	YBS	I	Q SLAB
9	16.99	8.49	41.63	62569.5	1203.0	19.08	10.83	40.17	77476.4	1398.1
27	25.96	17.46	32.67	44705.2		28.29	20.04	30.96	54599.4	

NUMBER OF SHEAR CONNECTORS NEEDED TO PROVIDE FOR ULTIMATE STRENGTH 234

NUMBER OF LONGITUDINAL STIFFENERS NEEDED 0

TRANSVERSE STIFFENERS NOT REQUIRED

SIMPLE SPAN OUTPUT DATA PROBLEM NUMBER S2NW

MOMENTS (K-FT.) AT SPAN 1/20 POINTS

SP	GIRDER	P-LOAD	NON-C.	TOT.NC	COMP.	SIDEWK	LIVE LOAD	RR-I
1	45.2	3.7	215.2	264.0	138.0	0.0	270.9 T	0.0
2	86.0	7.4	407.7	501.1	261.4	0.0	509.9 T	0.0
3	122.6	11.1	577.6	711.3	370.3	0.0	717.1 T	0.0
4	154.8	14.7	724.9	894.4	464.7	0.0	892.4 T	0.0
5	182.8	16.6	849.4	1048.8	544.6	0.0	1035.8 T	0.0
6	206.1	18.4	951.4	1175.9	609.9	0.0	1147.3 T	0.0
7	224.3	20.3	1030.7	1275.2	660.7	0.0	1232.3 T	0.0
8	237.3	22.1	1087.3	1346.7	697.0	0.0	1296.0 T	0.0
9	245.1	22.1	1121.3	1388.5	718.8	0.0	1327.9 T	0.0
10	247.7	22.1	1132.6	1402.4	726.1	0.0	1327.8 T	0.0

STRESS (PSI) AT SPAN 1/20 POINTS

	MINIMUM STRESS		MAXIMUM STRESS			ALLOWABLE	R FACTOR	
SP	TOP-S	BOT-S	TOP-C	TOP-S	BOT-S	FS	TOP-S	BOT-S
1	4898	-4270	133	5339	-6433	27000	0.917	0.664
2	9293	-8101	252	10124	-12173	27000	0.918	0.666
3	13187	-11492	355	14355	-17218	27000	0.919	0.667
4	16579	-14443	443	18032	-21568	27000	0.919	0.670
5	19438	-16933	515	21125	-25203	27000	0.920	0.672
6	18142	-14286	517	20066	-21425	27000	0.904	0.667
7	19671	-15488	556	21738	-23156	27000	0.905	0.669
8	20771	-16352	586	22944	-24415	27000	0.905	0.670
9	21416	-16860	601	23643	-25122	27000	0.906	0.671
10	21632	-17030	603	23859	-25292	27000	0.907	0.673

SHEARS (KIPS) AT SPAN 1/20 POINTS S2NW

SP	GIRDER	P-LOAD	NON-C.	TOT.NC	COMP.	SIDEWK	LIVE LOAD	RR-I
0	10.1	5.8	48.6	64.5	31.1	0.0	67.0 T	0.0
1	9.2	0.8	43.7	53.7	28.0	0.0	58.3 T	0.0
2	8.3	0.8	38.9	48.0	24.9	0.0	55.1 T	0.0
3	7.4	0.8	34.0	42.2	21.8	0.0	51.9 T	0.0
4	6.5	0.8	29.1	36.4	18.7	0.0	48.7 T	0.0
5	5.5	0.4	24.3	30.2	15.6	0.0	45.4 T	0.0
6	4.5	0.4	19.4	24.3	12.5	0.0	42.1 T	0.0
7	3.3	0.4	14.6	18.3	9.3	0.0	38.8 T	0.0
8	2.2	0.4	9.7	12.3	6.2	0.0	35.5 T	0.0
9	1.1	0.0	4.9	6.0	3.1	0.0	32.1 T	0.0
10	0.0	0.0	0.0	0.0	0.0	0.0	28.7 T	0.0

	DEAD LOAD DEFLECTIONS (INCHES)					SHEAR	
SP	GIRDER	P-LOAD	NON-C.	TOT.NC	COMP.	RANGE(KIPS)	CON.SPAC(IN)
0	0.000	0.000	0.000	0.000	0.000	67.0	9.61
1	0.082	0.007	0.379	0.468	0.122	59.9	10.74
2	0.161	0.015	0.745	0.920	0.241	58.9	10.93
3	0.235	0.021	1.086	1.342	0.352	58.1	11.08
4	0.302	0.027	1.394	1.722	0.452	57.3	11.24
5	0.359	0.033	1.658	2.049	0.538	56.7	11.36
6	0.407	0.037	1.876	2.319	0.610	56.6	12.12
7	0.445	0.040	2.050	2.534	0.668	56.9	12.06
8	0.472	0.043	2.176	2.691	0.710	57.2	12.00
9	0.489	0.044	2.253	2.786	0.735	57.4	11.95
10	0.495	0.045	2.278	2.817	0.744	57.4	11.94

LIVE LOAD DEFLECTIONS (INCHES)

TRUCK	LANE	MILITARY	RAILROAD	SIDEWALK	L/ 800
0.605	0.494	0.424	0.000	0.000	1.399

CALCULATION SHEET

PROJECT: I-75 / I-575 NORTHWEST CORRIDOR
JOB NUMBER NH000-0073-03(242)
CALC NO. BR#31

SUBJECT: Beam Design Output - Spans 2&3 (beam 5) SHEET NO.
BY: JCR DATE: 11/30/2009 SHEET REV.

Sufficient sample calculations representative of the scope and conditions in the design calculation were performed and the results compared to demonstrate the computer program adequacy.

16-OCT-09 GEORGIA DEPARTMENT OF TRANSPORTATION PROB. NO. S2NW
11:36:16 PRECONSTUCTION DIVISION - OFFICE OF BRIDGE & STRUCTURAL DESIGN

SIMPLE SPAN

REVISED: JUNE 26, 2008

PSC 10/21/09

I-75 OVER NOONDAY CREEK - SPANS 2 & 3 (Beam 5)

SPAN DATA

BEAM	D/A	L.L.C.	T L M	LENGTH	D.F.M.	D.F.V.	D.F.D.	NPL
CG	1	HS20	0 0 0	85.250	1.545	1.824	1.080	5

WDLNC	WDLC	SWLL	E	W BM	FS	FC	WG	TYPE STEEL
1.040	0.668	0.000	29.00	0.000	27.00	1.400	0.490	572

CONCENTRATED LOADS

X1	P1	X2	P2	X3	P3	X4	P4
0.000	2.165	21.313	0.396	42.625	0.396	63.938	0.396
85.250	2.165	0.000	0.000	0.000	0.000	0.000	0.000

BEAM DATA

ROLLED BEAM	P	NP	SECTION PROPERTIES I	Y TOP	Y BOT	PLATE GIRDER WEB D	T	TOP FLANGE W	T	BOTTOM FLANGE W	T
OWF	0	0 0	0.0	0.000	0.000	48.00	0.6250	12.00	0.7500	12.00	1.2500
OWF	0										

COMPOSITE SLAB

WIDTH	THICKNESS	COPING	SHEAR CAPACITY	ULTIMATE STRENGTH	N=ES/EC
102.000	8.250	0.000	12.38 K/ROW	25.21 KIPS EACH	9

BOTTOM COVER X-BEGIN	THICKNESS	PLATE WIDTH	LENGTH	TOP COVER X-BEGIN	THICKNESS	PLATE WIDTH	LENGTH	CONSTANT W	T
22.23	1.7500	12.00	42.00	0.00	0.0000	0.00	0.00	0	0

PLATE GIRDER PROPERTIES

WEB DEPTH	THICK	TOP FLANGE WIDTH	THICK	BOTTOM FLANGE WIDTH	THICK	WEB AND FLANGES PROPERTIES AREA	Y-TOP	Y-BOTTOM	I
48.00	0.6250	12.00	0.7500	12.00	1.2500	54.000	27.528	22.472	19788.8

WEB AND COVER PLATES

BOTTOM COVER X-BEGIN	THICKNESS	PLATE WIDTH	LENGTH	TOP COVER X-BEGIN	THICKNESS	PLATE WIDTH	LENGTH
22.23	1.7500	12.00	42.00	0.00	0.7500	12.00	0.00

WEB WITH COVER PLATES PROPERTIES

AREA	Y-TOP	Y-BOTTOM	I
60.000	29.800	20.700	22577.0

COMPOSITE SECTION PROPERTIES

	WEB AND FLANGES					WEB AND PLATES				
N	YTC	YTS	YBS	I	Q SLAB	YTC	YTS	YBS	I	Q SLAB
9	15.71	7.46	42.54	54614.6	1083.5	17.39	9.14	41.36	65169.7	1239.9
27	24.19	15.94	34.06	39764.4		26.45	18.20	32.30	46361.0	

NUMBER OF SHEAR CONNECTORS NEEDED TO PROVIDE FOR ULTIMATE STRENGTH 234

NUMBER OF LONGITUDINAL STIFFENERS NEEDED 0

TRANSVERSE STIFFENERS NOT REQUIRED

SIMPLE SPAN OUTPUT DATA PROBLEM NUMBER S2NW

MOMENTS (K-FT.) AT SPAN 1/20 POINTS

SP	GIRDER	P-LOAD	NON-C.	TOT.NC	COMP.	SIDEWK	LIVE LOAD	RR-I
1	33.5	2.5	179.5	215.6	115.3	0.0	246.7 T	0.0
2	63.7	5.1	340.1	408.9	218.5	0.0	464.0 T	0.0
3	90.5	7.6	481.8	580.0	309.5	0.0	651.9 T	0.0
4	114.0	10.1	604.7	728.8	388.4	0.0	810.6 T	0.0
5	134.2	12.7	708.6	855.5	455.1	0.0	939.8 T	0.0
6	150.9	13.5	793.6	958.0	509.7	0.0	1039.8 T	0.0
7	163.9	14.3	859.8	1038.0	552.2	0.0	1115.7 T	0.0
8	173.2	15.2	907.0	1095.4	582.6	0.0	1173.0 T	0.0
9	178.8	16.0	935.3	1130.2	600.8	0.0	1201.0 T	0.0
10	180.7	16.9	944.8	1142.4	606.8	0.0	1199.6 T	0.0

STRESS (PSI) AT SPAN 1/20 POINTS

	MINIMUM STRESS		MAXIMUM STRESS			ALLOWABLE	R FACTOR	
SP	TOP-S	BOT-S	TOP-C	TOP-S	BOT-S	FS	TOP-S	BOT-S
1	4153	-4122	125	4557	-6427	27000	0.911	0.641
2	7876	-7817	237	8637	-12153	27000	0.912	0.643
3	11170	-11084	333	12239	-17177	27000	0.913	0.645
4	14035	-13923	415	15364	-21499	27000	0.913	0.648
5	16469	-16334	483	18011	-25118	27000	0.914	0.650
6	17576	-14802	499	19325	-22721	27000	0.909	0.651
7	19043	-16037	536	20920	-24535	27000	0.910	0.654
8	20095	-16922	564	22068	-25856	27000	0.911	0.654
9	20731	-17457	579	22751	-26604	27000	0.911	0.656
10	20953	-17641	580	22970	-26778	27000	0.912	0.659

SHEARS (KIPS) AT SPAN 1/20 POINTS S2NW

SP	GIRDER	P-LOAD	NON-C.	TOT.NC	COMP.	SIDEWK	LIVE LOAD	RR-I
0	8.3	2.8	44.3	55.3	28.5	0.0	66.8 T	0.0
1	7.5	0.6	39.9	48.0	25.6	0.0	58.1 T	0.0
2	6.7	0.6	35.5	42.7	22.8	0.0	54.9 T	0.0
3	5.9	0.6	31.0	37.5	19.9	0.0	51.6 T	0.0
4	5.1	0.6	26.6	32.3	17.1	0.0	48.3 T	0.0
5	4.3	0.6	22.2	27.1	14.2	0.0	45.1 T	0.0
6	3.5	0.2	17.7	21.4	11.4	0.0	41.7 T	0.0
7	2.6	0.2	13.3	16.1	8.5	0.0	38.4 T	0.0
8	1.7	0.2	8.9	10.8	5.7	0.0	35.0 T	0.0
9	0.9	0.2	4.4	5.5	2.8	0.0	31.6 T	0.0
10	0.0	0.2	0.0	0.2	0.0	0.0	28.2 T	0.0

	DEAD LOAD DEFLECTIONS (INCHES)					SHEAR	
SP	GIRDER	P-LOAD	NON-C.	TOT.NC	COMP.	RANGE(KIPS)	CON.SPAC(IN)
0	0.000	0.000	0.000	0.000	0.000	66.8	9.34
1	0.060	0.005	0.314	0.379	0.099	59.7	10.45
2	0.117	0.010	0.618	0.746	0.195	58.6	10.66
3	0.172	0.015	0.904	1.091	0.285	57.7	10.81
4	0.221	0.020	1.164	1.405	0.366	56.9	10.98
5	0.264	0.024	1.390	1.678	0.437	56.0	11.15
6	0.301	0.027	1.580	1.907	0.497	55.7	11.67
7	0.330	0.029	1.731	2.090	0.544	55.8	11.66
8	0.351	0.031	1.842	2.224	0.579	56.0	11.61
9	0.364	0.032	1.909	2.305	0.599	56.3	11.57
10	0.368	0.033	1.931	2.331	0.606	56.4	11.54

LIVE LOAD DEFLECTIONS (INCHES)

TRUCK	LANE	MILITARY	RAILROAD	SIDEWALK	L/ 800
0.544	0.423	0.385	0.000	0.000	1.279

CALCULATION COVER SHEET

PROJECT	JOB NO.	CALC NO.	SHEET
I-75 / I-575 NORTHWEST CORRIDOR	NH000-0073-03(242)	BR#31	1
SUBJECT	DISCIPLINE		
Shear Stud Spacing Calculations	STRUCTURAL		

CALCULATION STATUS DESIGNATION	PRELIMINARY	CONFIRMED	SUPSEDED	VOIDED	INCOMPLETE
	☐	☐	☐	☐	X

COMPUTER PROGRAM/TYPE	SCP	MAINFRAME	PC	PROGRAM	VERSION/RELEASE NO.
	(X) YES ( ) NO	( )	(X)	Excel	2003

Note 1: Georgia Department of Transportation (GDOT) terminated Contract Number TOURDPPI60072 for its convenience prior the completion of all work under that contract and directed that the work with respect to these calculations be discontinued.
(a) These calculations were not completed at the time of GDOT's direction and the information contained herein is not complete and/or has not been fully verified or checked. These calculations are a work-in-progress and are presented only as such.
(b) Any user is cautioned that the use of these calculations and any related information or calculations, without access to factors and without proper regard for their purpose, could lead to erroneous conclusions.
(c) If any such calculations or any information contained herein is used in future work efforts or any follow on design work activity, a complete confirmation of the information contained herein should be performed prior to any such use.
(d) GTP has no responsibility for the use of this information not under its direct control.

Design calculations for steel beam shear stud spacings are included for span 1, and spans 2&3 (beams 1, 3 & 5).

NO.	REASON FOR REVISION	TOTAL NO. OF SHEETS	LAST SHEET NO.	BY	CHECKED	APPROVED/ ACCEPTED	DATE
A	As per GDOT's termination for convenience direction	13	13	JCR			11/30/09

RECORD OF REVISIONS

CALCULATION SHEET

PROJECT: I-75 / I-575 NORTHWEST CORRIDOR
JOB NUMBER NH000-0073-03(242)
CALC NO. BR#31

SUBJECT: Shear Stud Spacing Calculations - Span 1 SHEET NO.
BY: JCR DATE: 11/30/2009 SHEET REV.

Sufficient sample calculations representative of the scope and conditions in the design calculation were performed and the results compared to demonstrate the computer program adequacy.

BRIDGE: **I-75 over Noonday Creek**
COUNTY: **COBB**
P.I. NO: **713640**
PROJECT: **NH000-0575-01(028)**

J.B. TRIMBLE, INC.

J.B. TRIMBLE, INC.
JOB NO: **31-6036**
DESIGNED BY: **SHG**
DATE: **10/16/2009**

PJC 10-21-09

STUD SHEAR CONNECTORS

Beam Type Plate Girder ▼ Top Flange Width = 12" Stud ∅ = 0.75 " No. of Studs = 4

ADT (2001) = 1,000
ADT (2021) = 80,000
% TRUCKS = 4.4%
DIRECTIONAL = 100%

ADT (2031) = 119,500 in one direction

ADTT = 5,258 > 2500
USE 2,000,000 CYCLES

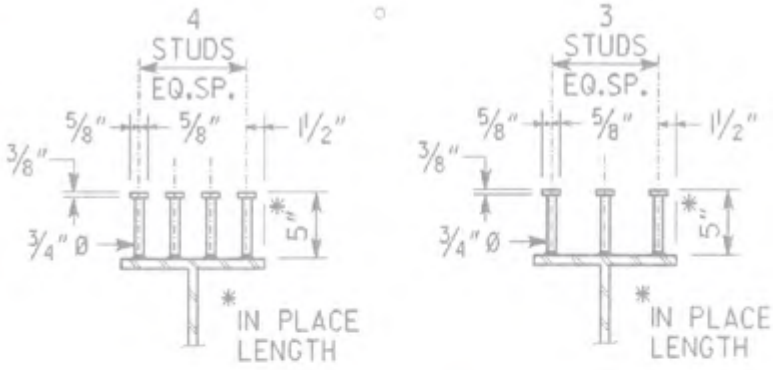
$Z_r = \alpha d^2$ (kips / studs)			
$\alpha \setminus d$ (in)	**0.5**	**0.75**	**1**
13000	3.25	7.31	13.00
10600	2.65	5.96	10.60
7850	1.96	4.42	7.85
5500	1.38	3.09	5.50

$Z_r = \alpha d^2$ (kips / row)			
Number of Studs : 3			
$\alpha \setminus d$ (in)	**0.5**	**0.75**	**1**
13000	9.75	21.94	39.00
10600	7.95	17.89	31.80
7850	5.89	13.25	23.55
5500	4.13	9.28	16.50

$Z_r = \alpha d^2$ (kips / row)			
Number of Studs : 4			
$\alpha \setminus d$	**0.5**	**0.75**	**1**
13000	13.00	29.25	52.00
10600	10.60	23.85	42.40
7850	7.85	17.66	31.40
5500	5.50	**12.38**	22.00

$E_c = 150^{1.5}\ 33\ (f'_c)^{½}$ (AASHTO 10.38.5.1.2)

$S_U = 0.4\ d^2\ (f'_c\ E_c)^{½}$			(AASHTO
d (in)	f'_c (psi)	E_c (psi)	S_U (kips)
0.5	3000	3320561	9.98
0.75	3000	3320561	22.46
1	3000	3320561	39.92
0.5	3500	3586616	11.20
0.75	**3500**	**3586616**	**25.21**
1	3500	3586616	44.82



AASHTO 10.38.2.4 The clear distance between the edge of a girder flange and the edge of the shear connector shall be not less than 1". Adjacent stud shear connectors shall not be closer than 4 diameters center to center.

GDOT calls for 3/4"∅ studs and 1 1/2" clear from edge of girder flange to CL of stud. Therefore, **4** studs are only allowed for beams with a minimum flange width of 12"+/-.

Shear Capacity (Z_r) = 12.38 K/Row

Ultimate Strength (S_U) = 25.21 kips

BRIDGE: **I-75 over Noonday Creek**
COUNTY: **COBB**
P.I. NO: **713640**
PROJECT: **NH000-0575-01(028)**

J.B. TRIMBLE, INC.

J.B. TRIMBLE, INC.
JOB NO: **31-6036**
DESIGNED BY: **SHG**
DATE: **10/16/2009**

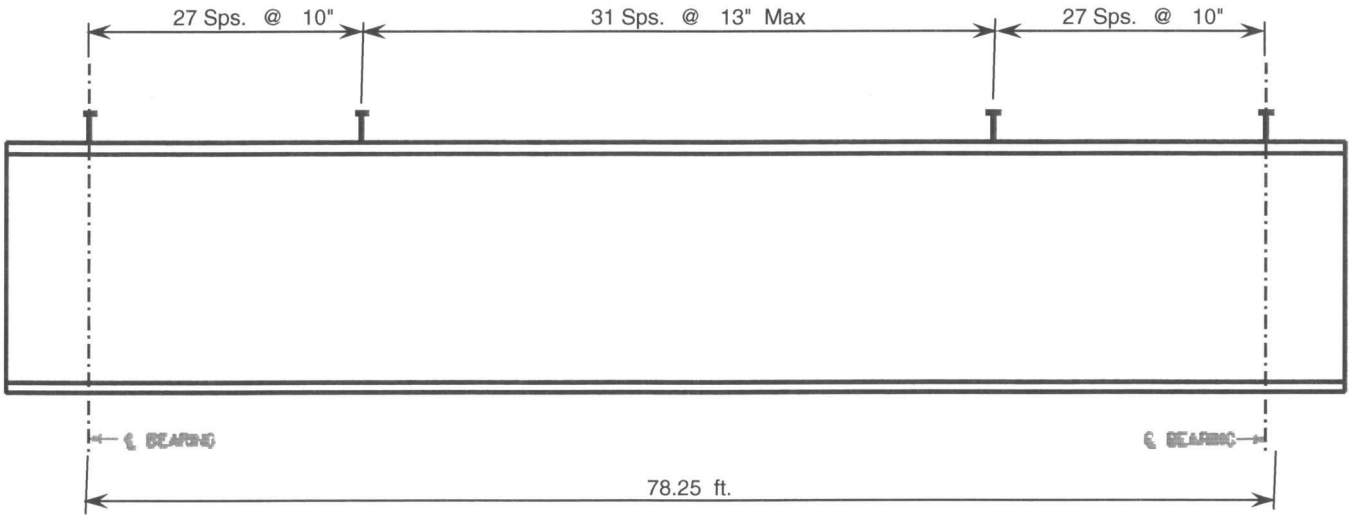
PJC 10/21/09

SHEAR STUD SPACING

Design Length = 78.25 ft.

Location (ft.)	s (in)
0.0	**10.35**
3.9	**11.82**
7.8	**12.09**
11.7	**12.27**
15.7	**12.46**
19.6	**12.67**
23.5	**13.18**
27.4	**13.21**
31.3	**13.18**
35.2	**13.13**
39.1	**13.12**

	Spacing 1	Spacing 2
Stud Spacing:	10 in.	13 in.



CALCULATION SHEET

PROJECT: I-75 / I-575 NORTHWEST CORRIDOR
JOB NUMBER NH000-0073-03(242)
CALC NO. BR#31

SUBJECT: Shear Stud Spacing Calculations - Spans 2&3 (beam 1) SHEET NO.
BY: JCR DATE: 11/30/2009 SHEET REV.

Sufficient sample calculations representative of the scope and conditions in the design calculation were performed and the results compared to demonstrate the computer program adequacy.

BRIDGE: **I-75 over Noonday Creek**
COUNTY: **COBB**
P.I. NO: **713640**
PROJECT: **NH000-0575-01(028)**

J.B. TRIMBLE, INC.

J.B. TRIMBLE, INC.
JOB NO: **31-6036**
DESIGNED BY: **SHG**
DATE: **10/16/2009**
PJC 10/21/09

STUD SHEAR CONNECTORS

Beam Type Plate Girder | Top Flange Width = 16" | Stud ∅ = 0.75 " | No. of Studs = 4

ADT (2001) = 1,000
ADT (2021) = 80,000
% TRUCKS = 4.4%
DIRECTIONAL = 100%

ADT (2031) = 119,500 in one direction

ADTT = 5,258 > 2500
USE 2,000,000 CYCLES

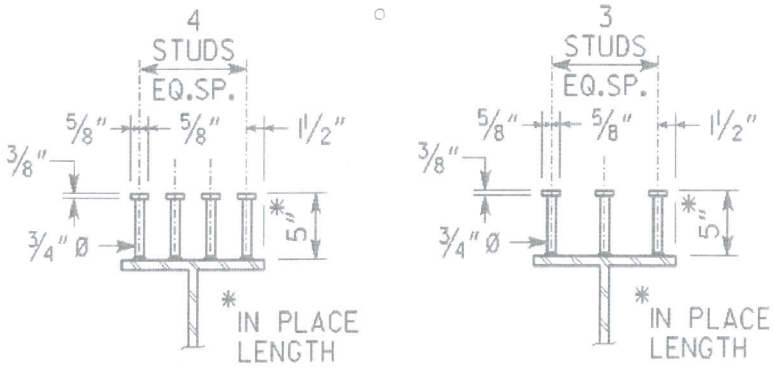
$Z_r = \alpha d^2$ (kips / studs)			
α \ **d** (in)	**0.5**	**0.75**	**1**
13000	3.25	7.31	13.00
10600	2.65	5.96	10.60
7850	1.96	4.42	7.85
5500	1.38	3.09	5.50

$Z_r = \alpha d^2$ (kips / row)			
Number of Studs : 3			
α \ **d** (in)	**0.5**	**0.75**	**1**
13000	9.75	21.94	39.00
10600	7.95	17.89	31.80
7850	5.89	13.25	23.55
5500	4.13	9.28	16.50

$Z_r = \alpha d^2$ (kips / row)			
Number of Studs : 4			
α \ **d**	**0.5**	**0.75**	**1**
13000	13.00	29.25	52.00
10600	10.60	23.85	42.40
7850	7.85	17.66	31.40
5500	5.50	**12.38**	22.00

$E_c = 150^{1.5}\ 33\ (f'_c)^{1/2}$ (AASHTO 10.38.5.1.2)

$S_U = 0.4\ d^2\ (f'_c\ E_c)^{1/2}$			(AASHTO
d (in)	f'_c (psi)	E_c (psi)	S_U (kips)
0.5	3000	3320561	9.98
0.75	3000	3320561	22.46
1	3000	3320561	39.92
0.5	3500	3586616	11.20
0.75	**3500**	**3586616**	**25.21**
1	3500	3586616	44.82



AASHTO 10.38.2.4 The clear distance between the edge of a girder flange and the edge of the shear connector shall be not less than 1". Adjacent stud shear connectors shall not be closer than 4 diameters center to center.

GDOT calls for 3/4"∅ studs and 1 1/2" clear from edge of girder flange to CL of stud. Therefore, **4** studs are only allowed for beams with a minimum flange width of 12"+/-.

Shear Capacity (Z_r) = 12.38 K/Row

Ultimate Strength (S_U) = 25.21 kips

BRIDGE: **I-75 over Noonday Creek**
COUNTY: **COBB**
P.I. NO: **713640**
PROJECT: **NH000-0575-01(028)**

J.B. TRIMBLE, INC.

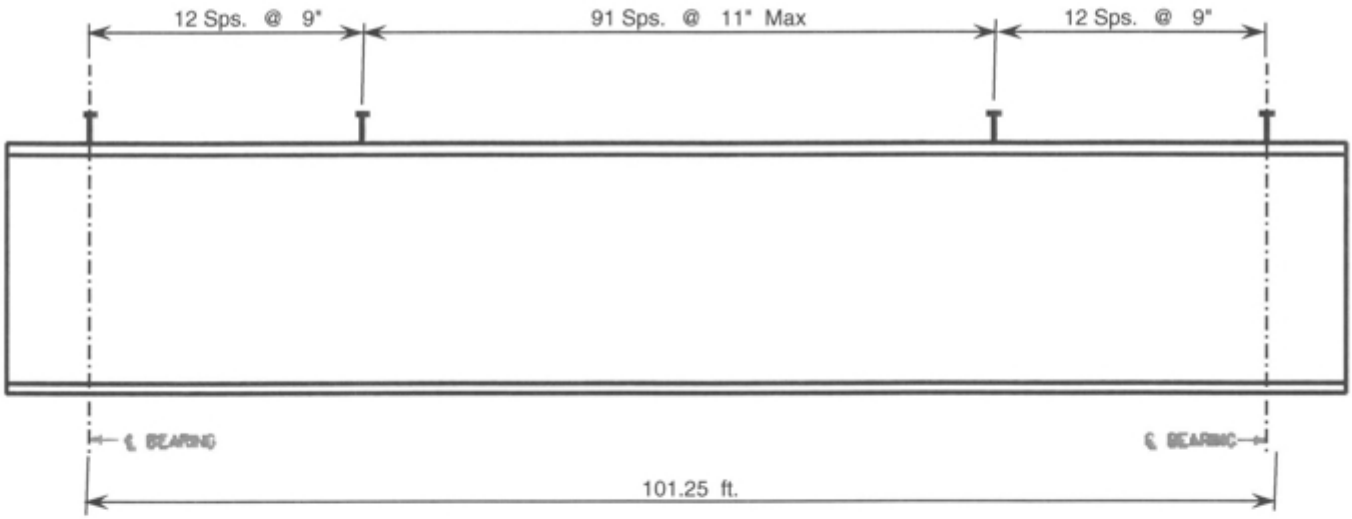
J.B. TRIMBLE, INC.
JOB NO: **31-6036**
DESIGNED BY: **SHG**
DATE: **10/16/2009**

SHEAR STUD SPACING

Design Length = 101.25 ft.

Location (ft.)	s (in)
0.0	**9.75**
5.1	**10.89**
10.1	**11.05**
15.2	**11.20**
20.3	**11.36**
25.3	**11.41**
30.4	**12.23**
35.4	**12.16**
40.5	**12.09**
45.6	**12.06**
50.6	**12.06**

	Spacing 1	Spacing 2
Stud Spacing:	9 in.	11 in.



CALCULATION SHEET

PROJECT: I-75 / I-575 NORTHWEST CORRIDOR
JOB NUMBER NH000-0073-03(242)
CALC NO. BR#31

SUBJECT: Shear Stud Spacing Calculations - Spans 2&3 (beam 3) SHEET NO.
BY: JCR DATE: 11/30/2009 SHEET REV.

Sufficient sample calculations representative of the scope and conditions in the design calculation were performed and the results compared to demonstrate the computer program adequacy.

BRIDGE: **I-75 over Noonday Creek**
COUNTY: **COBB**
P.I. NO: **713640**
PROJECT: **NH000-0575-01(028)**

J.B. TRIMBLE, INC.

J.B. TRIMBLE, INC.
JOB NO: **31-6036**
DESIGNED BY: **SHG**
DATE: **10/16/2009**

PJC 10/21/09

STUD SHEAR CONNECTORS

Beam Type Plate Girder ▼ Top Flange Width = 12" Stud ∅ = 0.75 " No. of Studs = 4

$Z_r = \alpha\, d^2$ (kips / studs)			
α \ d (in)	0.5	0.75	1
13000	3.25	7.31	13.00
10600	2.65	5.96	10.60
7850	1.96	4.42	7.85
5500	1.38	3.09	5.50

ADT (2001) = 1,000
ADT (2021) = 80,000
% TRUCKS = 4.4%
DIRECTIONAL = 100%

ADT (2031) = 119,500 in one direction

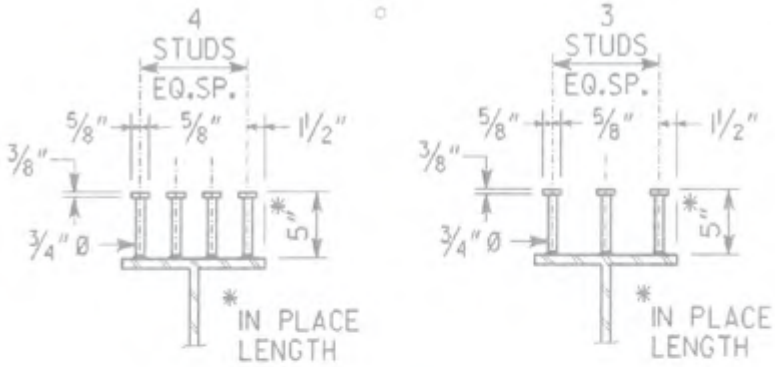
ADTT = 5,258 > 2500
USE 2,000,000 CYCLES

$Z_r = \alpha\, d^2$ (kips / row)			
Number of Studs : 3			
α \ d (in)	0.5	0.75	1
13000	9.75	21.94	39.00
10600	7.95	17.89	31.80
7850	5.89	13.25	23.55
5500	4.13	9.28	16.50

$Z_r = \alpha\, d^2$ (kips / row)			
Number of Studs : 4			
α \ d	0.5	0.75	1
13000	13.00	29.25	52.00
10600	10.60	23.85	42.40
7850	7.85	17.66	31.40
5500	5.50	**12.38**	22.00

$E_c = 150^{1.5}\, 33\, (f'_c)^{1/2}$ (AASHTO 10.38.5.1.2)

$S_U = 0.4\, d^2\, (f'_c\, E_c)^{1/2}$			(AASHTO
d (in)	f'_c (psi)	E_c (psi)	S_U (kips)
0.5	3000	3320561	9.98
0.75	3000	3320561	22.46
1	3000	3320561	39.92
0.5	3500	3586616	11.20
0.75	**3500**	**3586616**	**25.21**
1	3500	3586616	44.82



AASHTO 10.38.2.4 The clear distance between the edge of a girder flange and the edge of the shear connector shall be not less than 1". Adjacent stud shear connectors shall not be closer than 4 diameters center to center.

GDOT calls for 3/4"∅ studs and 1 1/2" clear from edge of girder flange to CL of stud. Therefore, **4** studs are only allowed for beams with a minimum flange width of 12"+/-.

Shear Capacity (Z_r) = 12.38 K/Row

Ultimate Strength (S_U) = 25.21 kips

BRIDGE: **I-75 over Noonday Creek**
COUNTY: **COBB**
P.I. NO: **713640**
PROJECT: **NH000-0575-01(028)**

J.B. TRIMBLE, INC.

J.B. TRIMBLE, INC.
JOB NO: **31-6036**
DESIGNED BY: **SHG**
DATE: **10/16/2009**

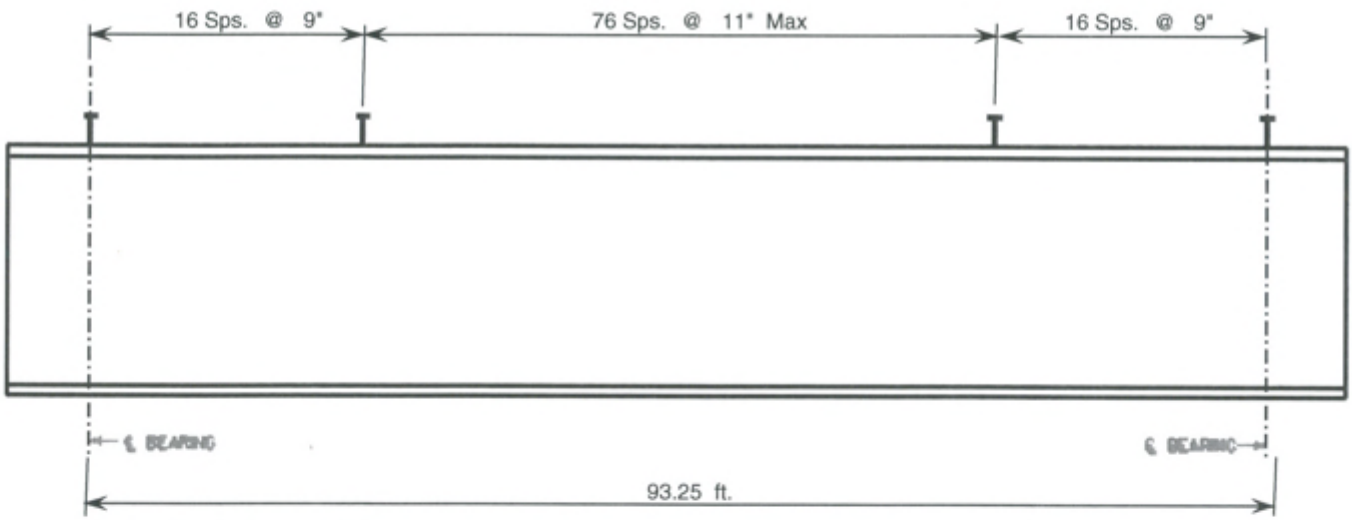
PSC 10/21/09

SHEAR STUD SPACING

Design Length = 93.25 ft.

Location (ft.)	s (in)
0.0	**9.61**
4.7	**10.74**
9.3	**10.93**
14.0	**11.08**
18.7	**11.24**
23.3	**11.36**
28.0	**12.12**
32.6	**12.06**
37.3	**12.00**
42.0	**11.95**
46.6	**11.94**

	Spacing 1	Spacing 2
Stud Spacing:	9 in.	11 in.



CALCULATION SHEET

PROJECT: I-75 / I-575 NORTHWEST CORRIDOR
JOB NUMBER NH000-0073-03(242)
CALC NO. BR#31

SUBJECT: Shear Stud Spacing Calculations - Spans 2&3 (beam 5) SHEET NO.
BY: JCR DATE: 11/30/2009 SHEET REV.

Sufficient sample calculations representative of the scope and conditions in the design calculation were performed and the results compared to demonstrate the computer program adequacy.

BRIDGE: **I-75 over Noonday Creek**
COUNTY: **COBB**
P.I. NO: **713640**
PROJECT: **NH000-0575-01(028)**

J.B. TRIMBLE, INC.

J.B. TRIMBLE, INC.
JOB NO: **31-6036**
DESIGNED BY: **SHG**
DATE: **10/16/2009**

PTC 10/21/09

STUD SHEAR CONNECTORS

Beam Type Plate Girder ▼ Top Flange Width = 12" Stud ∅ = 0.75 " No. of Studs = 4

ADT (2001) = 1,000
ADT (2021) = 80,000
% TRUCKS = 4.4%
DIRECTIONAL = 100%

ADT (2031) = 119,500 in one direction

ADTT = 5,258 > 2500
USE 2,000,000 CYCLES

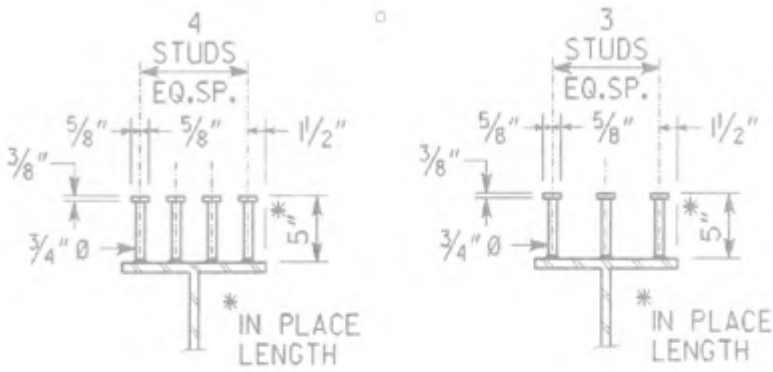
$Z_r = \alpha d^2$ (kips / studs)			
$\alpha \setminus d$ (in)	**0.5**	**0.75**	**1**
13000	3.25	7.31	13.00
10600	2.65	5.96	10.60
7850	1.96	4.42	7.85
5500	1.38	3.09	5.50

$Z_r = \alpha d^2$ (kips / row)			
Number of Studs : 3			
$\alpha \setminus d$ (in)	**0.5**	**0.75**	**1**
13000	9.75	21.94	39.00
10600	7.95	17.89	31.80
7850	5.89	13.25	23.55
5500	4.13	9.28	16.50

$Z_r = \alpha d^2$ (kips / row)			
Number of Studs : 4			
$\alpha \setminus d$	**0.5**	**0.75**	**1**
13000	13.00	29.25	52.00
10600	10.60	23.85	42.40
7850	7.85	17.66	31.40
5500	5.50	**12.38**	22.00

$E_c = 150^{1.5}\ 33\ (f'_c)^{½}$ (AASHTO 10.38.5.1.2)

$S_U = 0.4\ d^2\ (f'_c\ E_c)^{½}$			(AASHTO
d (in)	f'_c (psi)	E_c (psi)	S_U (kips)
0.5	3000	3320561	9.98
0.75	3000	3320561	22.46
1	3000	3320561	39.92
0.5	3500	3586616	11.20
0.75	**3500**	**3586616**	**25.21**
1	3500	3586616	44.82



AASHTO 10.38.2.4 The clear distance between the edge of a girder flange and the edge of the shear connector shall be not less than 1". Adjacent stud shear connectors shall not be closer than 4 diameters center to center.

GDOT calls for 3/4"∅ studs and 1 1/2" clear from edge of girder flange to CL of stud. Therefore, **4** studs are only allowed for beams with a minimum flange width of 12"+/-.

Shear Capacity (Z_r) = 12.38 K/Row

Ultimate Strength (S_U) = 25.21 kips

BRIDGE: **I-75 over Noonday Creek**
COUNTY: **COBB**
P.I. NO: **713640**
PROJECT: **NH000-0575-01(028)**

J.B. TRIMBLE, INC.

J.B. TRIMBLE, INC.
JOB NO: **31-6036**
DESIGNED BY: **SHG**
DATE: **10/16/2009**

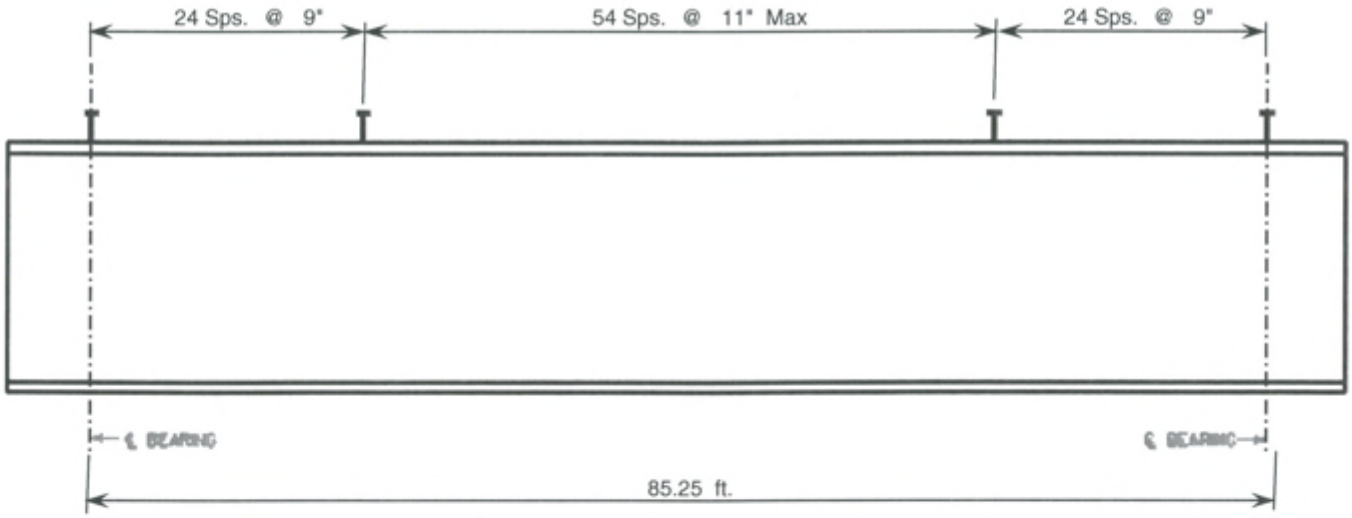
PSC 10/21/09

SHEAR STUD SPACING

Design Length = 85.25 ft.

Location (ft.)	s (in)
0.0	**9.34**
4.3	**10.45**
8.5	**10.66**
12.8	**10.81**
17.1	**10.98**
21.3	**11.15**
25.6	**11.67**
29.8	**11.66**
34.1	**11.61**
38.4	**11.57**
42.6	**11.54**

	Spacing 1	Spacing 2
Stud Spacing:	9 in.	11 in.



CALCULATION COVER SHEET

PROJECT	JOB NO.	CALC NO.	SHEET
I-75 / I-575 NORTHWEST CORRIDOR	NH000-0073-03(242)	BR#31	1
SUBJECT	DISCIPLINE		
Bearing Design	STRUCTURAL		

CALCULATION STATUS DESIGNATION	PRELIMINARY	CONFIRMED	SUPSEDED	VOIDED	INCOMPLETE
	☐	☐	☐	☐	X

COMPUTER PROGRAM/TYPE	SCP	MAINFRAME	PC	PROGRAM	VERSION/RELEASE NO.
	(X) YES ( ) NO	( )	(X)	Excel	2003

Note 1: Georgia Department of Transportation (GDOT) terminated Contract Number TOURDPPI60072 for its convenience prior the completion of all work under that contract and directed that the work with respect to these calculations be discontinued.
(a) These calculations were not completed at the time of GDOT's direction and the information contained herein is not complete and/or has not been fully verified or checked. These calculations are a work-in-progress and are presented only as such.
(b) Any user is cautioned that the use of these calculations and any related information or calculations, without access to factors and without proper regard for their purpose, could lead to erroneous conclusions.
(c) If any such calculations or any information contained herein is used in future work efforts or any follow on design work activity, a complete confirmation of the information contained herein should be performed prior to any such use.
(d) GTP has no responsibility for the use of this information not under its direct control.

Bearing Design calculations are included for bearings at bents 1, 2, 3 and 4.

NO.	REASON FOR REVISION	TOTAL NO. OF SHEETS	LAST SHEET NO.	BY	CHECKED	APPROVED/ ACCEPTED	DATE
A	As per GDOT's termination for convenience direction	9	9	JCR			11/30/09

RECORD OF REVISIONS

CALCULATION SHEET

PROJECT: I-75 / I-575 NORTHWEST CORRIDOR
JOB NUMBER NH000-0073-03(242)
CALC NO. BR#31

SUBJECT: Bearing Design
BY: JCR DATE: 11/30/2009

SHEET NO.
SHEET REV.

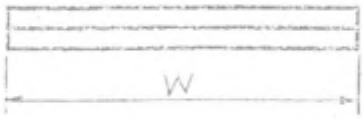
Sufficient sample calculations representative of the scope and conditions in the design calculation were performed and the results compared to demonstrate the computer program adequacy.

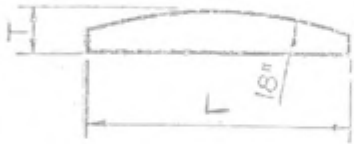
BRIDGE: **I-75 over Noonday Creek**
COUNTY: **COBB**
P.I. NO: **713640**
PROJECT: **NH000-0575-01(028)**

J.B. TRIMBLE, INC.

JOB NO: **31-6036**
DESIGNED BY: **SHG**
DATE: **10/30/2009**

SUGGESTED SHAPE AND SIZE OF SELF LUBRICATING BRONZE PLATES





SIZE AND MAXIMUM LOAD					
W	L	T	WITH SLOTS 2-3X1 3/16	WITH HOLES 2-1 3/16 ϕ	PLAIN
10	7	1			140
10	8	1 1/4			160
10	9	1 1/4			180
10 1/2	7	1			147
10 1/2	8	1 1/4			168
10 1/2	9	1 1/4			189
12	6	1	131	140	144
12	7	1	155	164	168
12	8	1 1/4	179	188	192
12	9	1 1/4			216

USE ONLY THOSE PLATES WHICH HAVE A MAXIMUM LOAD SHOWN

PURPOSE: To standardize plate sizes within the office so that plates may be stocked by suppliers, thus making them more economical.

DESIGN SPECIFICATION: Bronze plates shall conform to ASTM Designation B 22 Alloy B and supplemental specifications and shall have an allowable unit stress of 2000 psi in compression.

LIMITATIONS: Sliding plate type bearings shall not be used where the anticipated total movement (expansion plus contraction) exceeds 3 inches for assemblies without anchor bolts through the flanges and 2 inches for assemblies with anchor bolts through the flanges.

When the gradient of the girder at the bearing exceeds 4.0%, the top of the upper plate (sole plate) shall be beveled to match the girder gradient.

COEFFICIENT OF FRICTION: For design purposes a value of 0.10 shall be used.

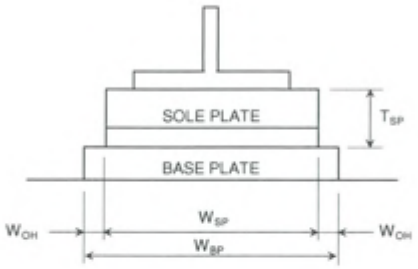
NOTE: WIDTH OF LBS A IS TO BE 2" LESS THAN WIDTH OF SOLE PL

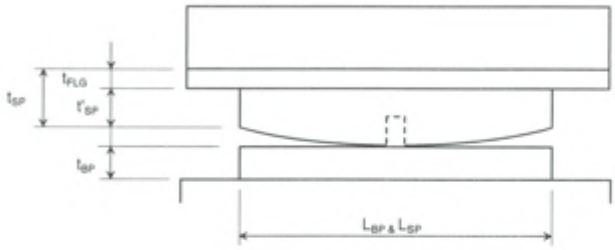
BRIDGE: **I-75 over Noonday Creek**
COUNTY: **COBB**
P.I. NO: **713640**
PROJECT: **NH000-0575-01(028)**

J.B. TRIMBLE, INC.

JOB NO: **31-6036**
DESIGNED BY: **SHG**
DATE: **10/30/2009**

PSC 11/3/09





BENTS 1 (All Beams)
3 BK (Beams 5 & 6)
4 (Beams 5 & 6)

FIXED BEARING CALCULATIONS

GENERAL INPUT:

Beam Type	Plate Girder			
R (Reaction) =	150.7	Kips		
Bottom Flange Thickness, t_{FLG} =	1.25	in		32 mm
W_{SP} =	12.00	in		305 mm
W_{BP} =	12.00	in		305 mm
L_{SP} =	12.00	in		305 mm
f'_c =	3500	psi		
$F_b = 0.3f'_c$ =	1.050	ksi	AASHTO Art. 8.15.2.1.3	

SOLE PLATE:

M=RL/8 $S=wt^2/6$ $f_s=M/S$

F_y =	36000	psi	AASHTO Table 10.2B		
$F_{yb} = .55F_y$ =	19.8	ksi	AASHTO 10.32.1A		
$t_{SP} = [3/4(RW_{SP})/(L_{SP}F_{YB})]^{½}$ =	2.39	in.			
$t'_{SP} = t_{SP} - t_{FLG}$ =	1.14				29 mm
Rad (Radius) =	18.00	in			
$= t'_{SP} + Rad - [Rad^2 - (½L_{SP})^2]^{½}$ =	2.17	in ----------> use =	2.25	in	57 mm

BASE (MASONRY) PLATE:

M=(R/W)(W/2)(W/4)=RW/8 $S_X=W_{SP}T_{BP}^2/6$ $f_s=M/S$

$L_{BP} = R/(W_{BP}Fb)$ =	11.96	in ----------> use =	12.00	in	305 mm
$t_{BP} = [3/4(RL_{BP})/(W_{BP}F_{YB})]^{½}$ =	2.39	in ----------> use =	2.50	in	64 mm

ALLOWABLE BEARING ON CONCRETE:

$f_b = R/(L_{BP} * W_{BP})$ = 1.046 ksi **fb < Fb --> OK**

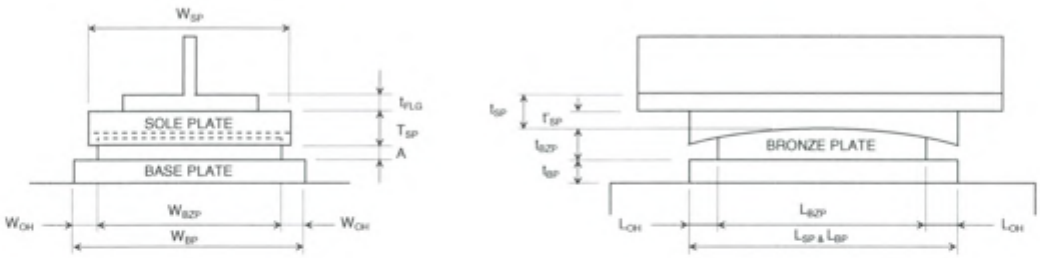
BASE PLATE			SOLE PLATE			BEARING
WIDTH	LENGTH	HEIGHT	WIDTH	LENGTH	HEIGHT	DEPTH
12"	12"	2.5"	12"	12"	2.25"	4.75"

BRIDGE: **I-75 over Noonday Creek**
COUNTY: **COBB**
P.I. NO: **713640**
PROJECT: **NH000-0575-01(028)**

J.B. TRIMBLE, INC.

JOB NO: **31-6036**
DESIGNED BY: **SHG**
DATE: **10/30/2009**

PJS 11/5/09



EXPANSION BEARING CALCULATIONS

BENTS 2 BK (All Beams)
2 AH (Beams 5 & 6)
3 AH (Beams 5 & 6)

GENERAL INPUT:

Beam Type Plate Girder

R (Reaction) =	150.68	Kips	
Bottom Flange Thick, t_{FLG} =	1.25	in	32 mm
W_{SP} =	12.00	in	305 mm
W_{BZP} =	12.00	in	305 mm
W_{BP} =	12.00	in	305 mm
L_{SP} =	9.00	in	229 mm
L_{BP} =	12.00	in	305 mm

ALLOWABLE BEARING ON CONCRETE:

f'_c =	3500	psi	
$F_b = 0.3f'_c$ =	1.050	ksi	
$f_b = R/(L_{BP} * W_{BP})$ =	1.046	ksi	**fb < Fb --> OK**

BRONZE PLATE WIDTH (W_{BZP}):

TYPE = SELF LUBRICATING ASTM B22 ALLOY 911

BEARING CAPACITY =	2000	psi			
L_{BZP} =	6.28	in ----------> use =	7.0	in	178 mm

BASE (MASONRY) PLATE:

Max of W_{OH} or L_{OH} =	2.50	in			
$M = wL^2/2 = f_b$ Max$(W_{OH}$ or $L_{OH})^2/2$ =	3.27	K-in			
F_y =	36000	psi	AASHTO Table 10.2B		
$F_{yb} = .55F_y$ =	19.8	ksi	AASHTO 10.32.1A		
$t_{BP} = [6M/F_{yb}]^{1/2}$ =	1.00	in ----------> use =	1.00	in	25 mm

SOLE PLATE:

$t_{SP} = [3/4(RW_{SP})/(L_{SP}F_{YB})]^{1/2}$ =	2.76	in.			
$t'_{SP} = t_{SP} - t_{FLG}$ =	1.51	in ----------> use =	1.50	in	
Rad (Radius) =	18.00	in			
$T_{SP} = t'_{SP}$ + Rad - [Rad^2 - $(½L_{BZP})^2]^{1/2}$ =	1.84	in ----------> use =	2.00	in	

BRONZE PLATE THICKNESS (t_{BZP}):

A =	0.50	in			
$t_{BZP} = (T_{SP} - t'_{SP}) + A$ =	1.00	in ----------> use =	1.00	in	25 mm

BASE PLATE			SOLE PLATE			BRONZE PLATE			BEARING
WIDTH	LENGTH	HEIGHT	WIDTH	LENGTH	HEIGHT	WIDTH	LENGTH	HEIGHT	DEPTH
12"	12"	1"	12"	9"	1.5"	12"	7"	1"	3.5"

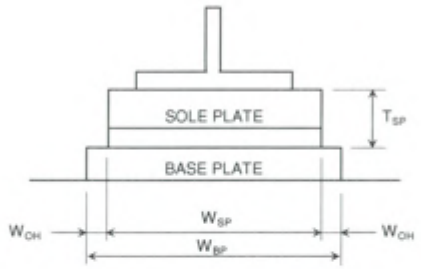
BRIDGE: **I-75 over Noonday Creek**
COUNTY: **COBB**
P.I. NO: **713640**
PROJECT: **NH000-0575-01(028)**

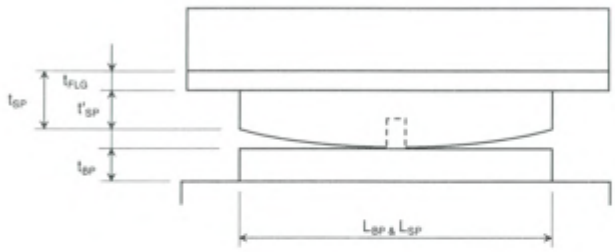
J.B. TRIMBLE, INC.

JOB NO: **31-6036**
DESIGNED BY: **SHG**
DATE: **10/30/2009**

PJC 11/3/09

Beams 3 & 4





FIXED BEARING CALCULATIONS

BENTS 3 BK (Beams 3 & 4)
4 (Beams 3 & 4)

GENERAL INPUT:

Beam Type	Plate Girder		
R (Reaction) =	162.6 Kips		
Bottom Flange Thickness, t_{FLG} =	1.375 in		35 mm
W_{SP} =	14.00 in		356 mm
W_{BP} =	14.00 in		356 mm
L_{SP} =	11.25 in		286 mm
f'_c =	3500 psi		
$F_b = 0.3f'_c$ =	1.050 ksi	AASHTO Art. 8.15.2.1.3	

SOLE PLATE:

M=RL/8 $S=wt^2/6$ $f_s=M/S$

F_y =	36000 psi	AASHTO Table 10.2B			
$F_{yb} = .55F_y$ =	19.8 ksi	AASHTO 10.32.1A			
$t_{SP} = [3/4(RW_{SP})/(L_{SP}F_{YB})]^{½}$ =	2.77 in.				
$t'_{SP} = t_{SP} - t_{FLG}$ =	1.39				35 mm
Rad (Radius) =	18.00 in				
$= t'_{SP} + Rad - [Rad^2 - (½L_{SP})^2]^{½}$ =	2.29 in	----------> use =	2.50	in	64 mm

BASE (MASONRY) PLATE:

M=(R/W)(W/2)(W/4)=RW/8 $S_X=W_{SP}T_{BP}^2/6$ $f_s=M/S$

$L_{BP} = R/(W_{BP}Fb)$ =	11.06 in	----------> use =	11.25	in	286 mm
$t_{BP} = [3/4(RL_{BP})/(W_{BP}F_{YB})]^{½}$ =	2.22 in	----------> use =	2.25	in	57 mm

ALLOWABLE BEARING ON CONCRETE:

$f_b = R/(L_{BP} * W_{BP})$ = 1.032 ksi **fb < Fb --> OK**

BASE PLATE			SOLE PLATE			BEARING
WIDTH	LENGTH	HEIGHT	WIDTH	LENGTH	HEIGHT	DEPTH
14"	11.25"	2.25"	14"	11.25"	2.5"	4.75"

BRIDGE: **I-75 over Noonday Creek**
COUNTY: **COBB**
P.I. NO: **713640**
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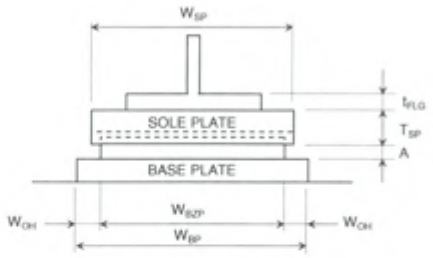
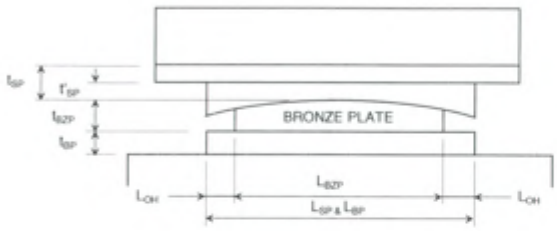
J.B. TRIMBLE, INC.

JOB NO: **31-6036**
DESIGNED BY: **SHG**
DATE: **10/30/2009**

Beams 3 & 4

PJC 11/3/09





EXPANSION BEARING CALCULATIONS

BENT 2 AH (Beams 3 & 4)
3 AH (Beams 3 & 4)

GENERAL INPUT:

Beam Type Plate Girder

R (Reaction) =	162.6	Kips	
Bottom Flange Thick, t_{FLG} =	1.375	in	35 mm
W_{SP} =	14.00	in	356 mm
W_{BZP} =	12.00	in	305 mm
W_{BP} =	14.00	in	356 mm
L_{SP} =	10.00	in	254 mm
L_{BP} =	11.25	in	286 mm

ALLOWABLE BEARING ON CONCRETE:

f'_c =	3500	psi	
$F_b = 0.3f'_c$ =	1.050	ksi	
$f_b = R/(L_{BP} * W_{BP})$ =	1.032	ksi	**fb < Fb --> OK**

BRONZE PLATE WIDTH (W_{BZP}):

TYPE = SELF LUBRICATING ASTM B22 ALLOY 911

BEARING CAPACITY =	2000	psi			
L_{BZP} =	6.77	in ----------> use =	8.0	in	203 mm

BASE (MASONRY) PLATE:

Max of W_{OH} or L_{OH} =	1.63	in			
$M = wL^2/2 = f_b$ Max(W_{OH} or L_{OH})$^2/2$ =	1.36	K-in			
F_y =	36000	psi	AASHTO Table 10.2B		
$F_{yb} = .55F_y$ =	19.8	ksi	AASHTO 10.32.1A		
$t_{BP} = [6M/F_{yb}]^{½}$ =	0.64	in ----------> use =	0.75	in	19 mm

SOLE PLATE:

$t_{SP} = [3/4(RW_{SP})/(L_{SP}F_{YB})]^{½}$ =	2.94	in.			
$t'_{SP} = t_{SP} - t_{FLG}$ =	1.56	in ----------> use =	1.75	in	
Rad (Radius) =	18.00	in			
$T_{SP} = t'_{SP} + Rad - [Rad^2 - (½L_{BZP})^2]^{½}$ =	2.20	in ----------> use =	2.25	in	

BRONZE PLATE THICKNESS (t_{BZP}):

A =	0.75	in			
$t_{BZP} = (T_{SP} - t'_{SP}) + A$ =	1.25	in ----------> use =	1.25	in	32 mm

BASE PLATE			SOLE PLATE			BRONZE PLATE			BEARING
WIDTH	LENGTH	HEIGHT	WIDTH	LENGTH	HEIGHT	WIDTH	LENGTH	HEIGHT	DEPTH
14"	11.25"	0.75"	14"	10"	1.75"	12"	8"	1.25"	3.75"

BRIDGE: **I-75 over Noonday Creek**
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J.B. TRIMBLE, INC.

JOB NO: **31-6036**
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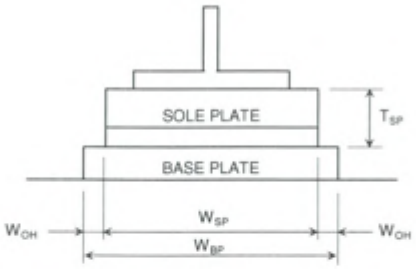
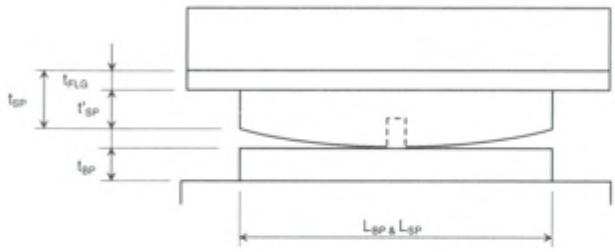
DATE: **10/30/2009**

Beams 1 & 2

PJC 11/3/09





FIXED BEARING CALCULATIONS

BENTS 3 BK (Beams 1 & 2)
4 (Beams 1 & 2)

GENERAL INPUT:

Beam Type	Plate Girder		
R (Reaction) =	171.1 Kips		
Bottom Flange Thickness, t_{FLG} =	1.375 in		35 mm
W_{SP} =	16.00 in		406 mm
W_{BP} =	16.00 in		406 mm
L_{SP} =	10.25 in		260 mm
f'_c =	3500 psi		
$F_b = 0.3f'_c$ =	1.050 ksi	AASHTO Art. 8.15.2.1.3	

SOLE PLATE:

M=RL/8 S=wt²/6 f_s=M/S

F_y =	36000 psi	AASHTO Table 10.2B			
$F_{yb} = .55F_y$ =	19.8 ksi	AASHTO 10.32.1A			
$t_{SP} = [3/4(RW_{SP})/(L_{SP}F_{YB})]^{½}$ =	3.18 in.				
$t'_{SP} = t_{SP} - t_{FLG}$ =	1.81				46 mm
Rad (Radius) =	18.00 in				
$= t'_{SP} + Rad - [Rad^2 - (½L_{SP})^2]^{½}$ =	2.55 in	----------> use =	2.75	in	70 mm

BASE (MASONRY) PLATE:

M=(R/W)(W/2)(W/4)=RW/8 $S_X = W_{SP}T_{BP}^2/6$ f_s=M/S

$L_{BP} = R/(W_{BP}Fb)$ =	10.18 in	----------> use =	10.25	in	260 mm
$t_{BP} = [3/4(RL_{BP})/(W_{BP}F_{YB})]^{½}$ =	2.04 in	----------> use =	2.25	in	57 mm

ALLOWABLE BEARING ON CONCRETE:

$f_b = R/(L_{BP} * W_{BP})$ = 1.043 ksi **fb < Fb --> OK**

BASE PLATE			SOLE PLATE			BEARING
WIDTH	LENGTH	HEIGHT	WIDTH	LENGTH	HEIGHT	DEPTH
16"	10.25"	2.25"	16"	10.25"	2.75"	5"

BRIDGE: **I-75 over Noonday Creek**
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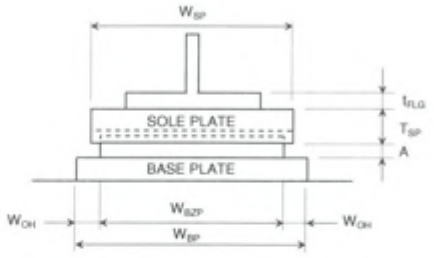
P.I. NO: **713640**
PROJECT: **NH000-0575-01(028)**

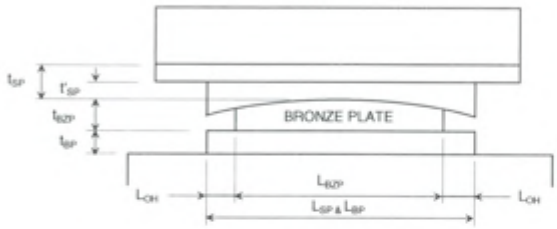
J.B. TRIMBLE, INC.

JOB NO: **31-6036**
DESIGNED BY: **SHG**
DATE: **10/30/2009**

PJC 11/3/09

Beams 1 & 2





EXPANSION BEARING CALCULATIONS

BENT 2 AH (Beams 1 & 2)
3 AH (Beams 1 & 2)

GENERAL INPUT:

Beam Type Plate Girder

R (Reaction) =	171.1	Kips	
Bottom Flange Thick, t_{FLG} =	1.375	in	35 mm
W_{SP} =	16.00	in	406 mm
W_{BZP} =	12.00	in	305 mm
W_{BP} =	16.00	in	406 mm
L_{SP} =	10.00	in	254 mm
L_{BP} =	10.25	in	260 mm

ALLOWABLE BEARING ON CONCRETE:

f'_c =	3500	psi	
$F_b = 0.3f'_c$ =	1.050	ksi	
$f_b = R/(L_{BP} * W_{BP})$ =	1.043	ksi	**fb < Fb --> OK**

BRONZE PLATE WIDTH (W_{BZP}):

TYPE = SELF LUBRICATING ASTM B22 ALLOY 911

BEARING CAPACITY =	2000	psi			
L_{BZP} =	7.13	in ----------> use =	8.0	in	203 mm

BASE (MASONRY) PLATE:

Max of W_{OH} or L_{OH} =	2.00	in			
$M = wL^2/2 = f_b$ Max$(W_{OH}$ or $L_{OH})^2/2$ =	2.09	K-in			
F_y =	36000	psi	AASHTO Table 10.2B		
$F_{yb} = .55F_y$ =	19.8	ksi	AASHTO 10.32.1A		
$t_{BP} = [6M/F_{yb}]^{½}$ =	0.80	in ----------> use =	1.00	in	25 mm

SOLE PLATE:

$t_{SP} = [3/4(RW_{SP})/(L_{SP}F_{YB})]^{½}$ =	3.22	in.			
$t'_{SP} = t_{SP} - t_{FLG}$ =	1.85	in ----------> use =	2.00	in	
Rad (Radius) =	18.00	in			
$T_{SP} = t'_{SP} + Rad - [Rad^2 - (½L_{BZP})^2]^{½}$ =	2.45	in ----------> use =	2.50	in	

BRONZE PLATE THICKNESS (t_{BZP}):

A =	0.75	in			
$t_{BZP} = (T_{SP} - t'_{SP}) + A$ =	1.25	in ----------> use =	1.25	in	32 mm

BASE PLATE			SOLE PLATE			BRONZE PLATE			BEARING
WIDTH	LENGTH	HEIGHT	WIDTH	LENGTH	HEIGHT	WIDTH	LENGTH	HEIGHT	DEPTH
16"	10.25"	1"	16"	10"	2"	12"	8"	1.25"	4.25"

CALCULATION COVER SHEET

PROJECT	JOB NO.	CALC NO.	SHEET
I-75 / I-575 NORTHWEST CORRIDOR	NH000-0073-03(242)	BR#31	1
SUBJECT	DISCIPLINE		
Substructure Design Input	STRUCTURAL		

CALCULATION STATUS DESIGNATION	PRELIMINARY	CONFIRMED	SUPSEDED	VOIDED	INCOMPLETE
	☐	☐	☐	☐	X

COMPUTER PROGRAM/TYPE	SCP	MAINFRAME	PC	PROGRAM	VERSION/RELEASE NO.
	(X) YES ( ) NO	( )	(X)	Excel	2003

Note 1: Georgia Department of Transportation (GDOT) terminated Contract Number TOURDPPI60072 for its convenience prior the completion of all work under that contract and directed that the work with respect to these calculations be discontinued.
(a) These calculations were not completed at the time of GDOT's direction and the information contained herein is not complete and/or has not been fully verified or checked. These calculations are a work-in-progress and are presented only as such.
(b) Any user is cautioned that the use of these calculations and any related information or calculations, without access to factors and without proper regard for their purpose, could lead to erroneous conclusions.
(c) If any such calculations or any information contained herein is used in future work efforts or any follow on design work activity, a complete confirmation of the information contained herein should be performed prior to any such use.
(d) GTP has no responsibility for the use of this information not under its direct control.

Substructure Design Input calculations are included for bents 2 and 3.

NO.	REASON FOR REVISION	TOTAL NO. OF SHEETS	LAST SHEET NO.	BY	CHECKED	APPROVED/ ACCEPTED	DATE
A	As per GDOT's termination for convenience direction	9	9	JCR			11/30/09

RECORD OF REVISIONS

CALCULATION SHEET

PROJECT: I-75 / I-575 NORTHWEST CORRIDOR
JOB NUMBER NH000-0073-03(242)
CALC NO. BR#31

SUBJECT: Bent Design Input - Bent 2 SHEET NO.
BY: JCR DATE: 11/30/2009 SHEET REV.

Sufficient sample calculations representative of the scope and conditions in the design calculation were performed and the results compared to demonstrate the computer program adequacy.

BRIDGE: **I-75 over Noonday Creek**
COUNTY: **COBB**
P.I. NO: **713640**
PROJECT: **NH000-0575-01(028)**

J.B. TRIMBLE, INC.

JOB NO: **31-6036**
DESIGNED BY: **SHG**
DATE: **10/24/2009**

PJC 10/24/09

PIER DESIGN CALCULATIONS

BENT 2

GENERAL REQUIREMENTS:

Live Load cases:		See GDOT Program BRLLCA		
Skew Angle:	63.50	° FROM CL BRIDGE	Is Bent Fix "F" or Exp. "E"?	E (F = Fix, E = Exp)
	26.5	° FROM CL BENT		
Concrete Strength:	3500	psi		
Rebar Strength:	60000	psi		
Ec =	3587	ksi	AASHTO 8.7.1	
Es =	29000	ksi	AASHTO 8.7.2	
Allowable Steel Stress:	24000	psi	AASHTO 8.15.2.2	
n = Ec/Es =	8		AASHTO 8.15.3.4	
Cap Bar size:	11	#		
Stirup Size:	5	#		
Maximum bars / row in cap:	12	bars		
Column Steel Ratios:	1	% min.		
	8	% max.		
Edge of Column to main rebar:	3.135	in.		

Impact Factor

	Length (ft)	Impact
LEFT SPAN	80.75	1.243
RIGHT SPAN	95.00	1.227
Avg. Impact =		1.24

Soil Weight 0.120 kcf

Columns:
TYPE S (S-SQUARE or RECTANGULAR, C-CIRCULAR, P-PILES)

Pile Spacing: 0.00 ft. MIN 0 ft. MAX
0.00 ft. EMBED 0 ft. EDGE

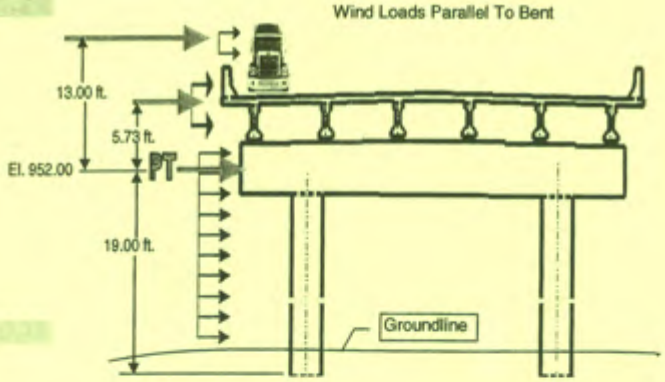
Pile Capacity:

TYPE	14 X 73	STEEL HP		
ALLOWABLE LOAD	192	KIPS =	96	TONS
UPLIFT	0	KIPS =		

WIND ON SUPERSTRUCTURE — AASHTO 3.15.2.1.1

	Left Span	Rigtht Span	
Parapet Height =	32 in.	32 in.	
Beam Height =	48 in.	48 in.	
'D' or 'H' Dimension =	9.5 in.	9.5 in.	
Beam + Coping + Slab =	4.79 ft.	4.79 ft.	
Total Height =	7.46 ft.	7.46 ft.	
Span Lengths =	80.75 ft.	95.00 ft.	TOTAL
Wind Force Area =	301.1 ft^2	354.3 ft^2	655 ft^2
Height of Cap =	4.00 ft.	4.00 ft.	
Wind Force Arm =	5.73 ft.		

Wind Loads Parallel To Bent

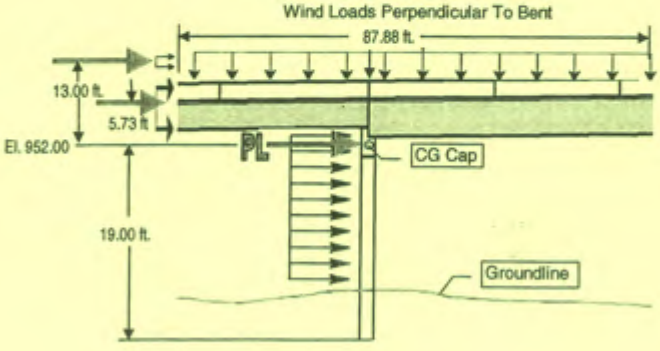


WIND ON SUBSTRUCTURE: — AASHTO 3.15.2.2

Wind Force =	0.040	ksf	PARA. & PERP.
Length of Cap =	42.00	ft.	
Width of Cap =	3.50	ft.	
CG of Cap ELEV =	952.00		
Ground Line ELEV=	935.00		
100 YR Scour ELEV =	0.00		
Depth to Point of Fixity =	2.00		
Pt. of Fixity ELEV =	933.00		
Bot. Cap to Pt. of Fixity =	17.00	ft.	
Design Height of Column =	19.00	ft.	CG Cap to Pt. of Fixity
Exposed Height of Column =	15.00	ft.	
Width of Column =	3.50	ft.	
Depth of Column =	3.50	ft.	
No. of Columns =	2	columns	

	PARA.	PERP.	
M_{CAP} =	10.64	127.68	k-ft.
M_{COL} =	19.95	39.90	k-ft.
M_{TOTAL} =	30.59	167.58	k-ft.
	PT = 1.61	PL = 8.82	kips

Wind Loads Perpendicular To Bent



BRIDGE: **I-75 over Noonday Creek**
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P.I. NO: **713640**
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J.B. TRIMBLE, INC.

JOB NO: **31-6036**
DESIGNED BY: **SHG**
DATE: **10/24/2009**

PIER DESIGN CALCULATIONS

BENT 2

WIND ON LIVE LOAD — AASHTO 3.15.2.1.2

Length =	87.88	ft.			
APT = APL =	12.79	ft.	Use-->	13.00	ft.

TRACTION FORCE: For One lane — AASHTO 3.9

LF = **0.00** k

TEMPERATURE FORCE: — AASHTO 3.16

Friction Force due to Temperature:

Δ = Temp. Deflection = ALPHA x Length x Change in Temp.

T_{RISE} =	30	° T_{FALL} =	40	° (Fahrenheit)
Material (C or S):	C	ALPHA =	0.000006	/° (Fahrenheit)

Force in Pad = Fs = [G x L x W x Deflection] / (Telas)

	LEFT	RIGHT	
Expansion Length =	80.75	95.00	ft
Δ =	0.233	0.274	in
G = Shear Modulus of Pad =	200	200	psi
L= Length of Pad =	10.50	10.50	in
W = Width of Pad =	12.00	12.00	in
Telas = Bearing Elastomer Depth =	4.250	4.250	in
Fs =	1.38	1.62	KIPS /pad
No. of Beams =	6	6	
Total Temperature Force =	8.27	9.73	kips @ top of seat
	9.14	10.76	kips @ center of cap
P_L =	8.18	9.63	kips
P_T =	4.08	4.80	kips

Difference =	P_L =	1.44	kips	AT CL CAP	
	P_T =	0.72	kips	AT CL CAP	
	P_L =	1.58	kips	AT CL CAP ----->	Use Total Lateral Force
	P_T =	0.79	kips	AT CL CAP	= PL + Equiv. Lateral Force from MDL due to eccentricity

Expansion of Concrete Cap =	**0.00018**	in/in	
Contraction of Concrete Cap =	**0.00044**	in/in	which includes 0.0002 for creep

STREAM FORCE: — AASHTO 3.18.1

100 yr Flood ELEV. =	942.5	ft.	
Point of Fixity =	19.00	ft.	
Bottom of Stream ELEV =	935.00	ft.	
Pt. of Fixity ELEV =	933.00		
V_{AVG} =	4.46	FPS @ 100 yr. Flood	
K =	1.4	for square ended piers	
$P_{AVG} = K * (V_{AVG})^2$ =	27.85	psf	AASHTO Eq. (3-4)
$P_{MAX} = 2 * P_{AVG}$ =	55.70	psf	
Piers Aligned with streaam flow:			
P_S =	0.731	kips	
M =	5.12	k-ft.	
$P_{CL\ CAP}$ =	0.269	k	

BRIDGE: **I-75 over Noonday Creek**
COUNTY: **COBB**
P.I. NO: **713640**
PROJECT: **NH000-0575-01(028)**

J.B. TRIMBLE, INC.

JOB NO: **31-6036**
DESIGNED BY: **SHG**
DATE: **10/24/2009**

PIER DESIGN CALCULATIONS

BENT 2

DEAD LOAD: AASHTO 3.3

LENGTH = 42.00 feet
SKEW = 63.50 degrees
STEP HT = 0.000 ft
STEP WT = 1.667 ft

SPAN 2

BEAM	BEAM SPACING	DISTANCE BETWEEN	DISTANCE ALONG	R dl	Add'l DL	DL
1		-0.650	-0.650	71.1	0.00	71.1
2	7.750	8.660	8.010	71.1	0.00	71.1
3	7.750	8.660	16.670	71.1	0.00	71.1
4	7.750	8.660	25.330	71.1	0.00	71.1
5	7.750	8.660	33.990	71.1	0.00	71.1
6	7.750	8.660	42.650	71.1	0.0	71.1
		-0.650	42.000			
TOTAL		42.000				426.5
					CL Brg to CL Bent =	0.583

SPAN 3

BEAM	BEAM SPACING	DISTANCE BETWEEN	DISTANCE ALONG	R dl	Add'l DL	DL
1		-0.650	-0.650	104.0	0.00	104.0
2	7.750	8.660	8.010	104.0	0.0	104.0
3	7.750	8.660	16.670	95.6	0.0	95.6
4	7.750	8.660	25.330	95.6	0.0	95.6
5	7.750	8.660	33.990	83.8	0.0	83.8
6	7.750	8.660	42.650	83.8	0.00	83.8
		-0.650	42.000			
TOTAL		42.000				566.8
					CL Brg to CL Bent =	0.583
						993.3

COMBINED LOADS

COLUMN = 1.750 FT - checking ¼ points on column

	POINT	MEMBER		DISTANCE ALONG	R dl	Add'l DL	DL	CHECK POINT
8.25								
	G1	1	8.900	-0.650	175.1	0.0	175.1	1
	EC	1	8.025	7.375				2
25.50								
	EC	2	0.875	9.125				3
	G2	2	-1.115	8.010	175.1	0.0	175.1	4
	CHECK	2	4.330	12.340				5
	G3	2	4.330	16.670	166.6	0.0	166.6	6
	CHECK	2	4.330	21.000				7
	G4	2	4.330	25.330	166.6	0.0	166.6	8
	CHECK	2	4.330	29.660				9
	G5	2	8.660	33.990	154.9	0.0	154.9	9
	EC	2	-1.115	32.875				10
8.25								
	EC	3	0.875	34.625				11
	G6	3	8.025	42.650	154.9	0.0	154.9	12
				-0.650				
			42.000					

ADDITIONAL DL MOMENT DUE TO ECCENTRICITY:

M_{DL} = 81.84 KIP-FT

(EQUIV. LONG FORCE) $F_{EL} = M_{DL} / H_{DESIGN\ OF\ COLUMN}$ = 4.31 KIP

(TOTAL LONG FORCE) $F_L = F_{EL} + P_{L\ TEMP}$ = 5.88 KIP

LIVE LOADS: AASHTO 3.4

	LEFT	RIGHT			
Span Lengths =	80.75	95.00	ft.		
LIVE LOAD REACTION		65.90	KIPS	AXLE LOAD NO IMPACT	VERIFY !!!!
		82.24	KIPS	LANE LOAD NO IMPACT	
AVERAGE IMPACT		1.24			
P-LOAD FOR BRLLCA INPUT		51	KIPS		

CENTRIFUGAL FORCE: AASHTO 3.10

LIVE LOAD REACTION = 65.90 KIPS AXLE LOAD NO IMPACT

Speed (S) = 70 mph
Curve Radius (R) = 3880 ft.
$C = 6.68\ S^2 / R$ = 8.44 %
Cent. Force @ 6ft above Rdwy = 5.56 kips

CALCULATION SHEET

PROJECT: I-75 / I-575 NORTHWEST CORRIDOR
JOB NUMBER NH000-0073-03(242)
CALC NO. BR#31

SUBJECT: Bent Design Input - Bent 3 SHEET NO.
BY: JCR DATE: 11/30/2009 SHEET REV.

Sufficient sample calculations representative of the scope and conditions in the design calculation were performed and the results compared to demonstrate the computer program adequacy.

BRIDGE: **I-75 over Noonday Creek**
COUNTY: **COBB**
P.I. NO: **713640**
PROJECT: **NH000-0575-01(028)**

J.B. TRIMBLE, INC.

JOB NO: **31-6036**
DESIGNED BY: **SHG**
DATE: **10/24/2009**

PJC 10/26/09

PIER DESIGN CALCULATIONS

BENT 3

GENERAL REQUIREMENTS:

Live Load cases:		See GDOT Program BRLLCA		
Skew Angle:		63.50	° FROM CL BRIDGE	Is Bent Fix "F" or Exp. "E"? e — F = Fix, E = Exp
		26.5	° FROM CL BENT	
Concrete Strength:		3500	psi	
Rebar Strength:		60000	psi	
	Ec =	3587	ksi	AASHTO 8.7.1
	Es =	29000	ksi	AASHTO 8.7.2
Allowable Steel Stress:		24000	psi	AASHTO 8.15.2.2
	n = Ec/Es =	8		AASHTO 8.15.3.4
Cap Bar size:		11	#	
Stirup Size:		5	#	
Maximum bars / row in cap:		12	bars	
Column Steel Ratios:		1	% min.	
		8	% max.	
Edge of Column to main rebar:		3.135	in.	

Impact Factor

	Length (ft)	Impact
LEFT SPAN	95.00	1.227
RIGHT SPAN	95.00	1.227
	Avg. Impact =	1.23

Soil Weight 0.120 kcf

Columns:
TYPE S (S-SQUARE or RECTANGULAR, C-CIRCULAR, P-PILES)

Pile Spacing: 0.00 ft. MIN 0 ft. MAX
0.00 ft. EMBED 0 ft. EDGE

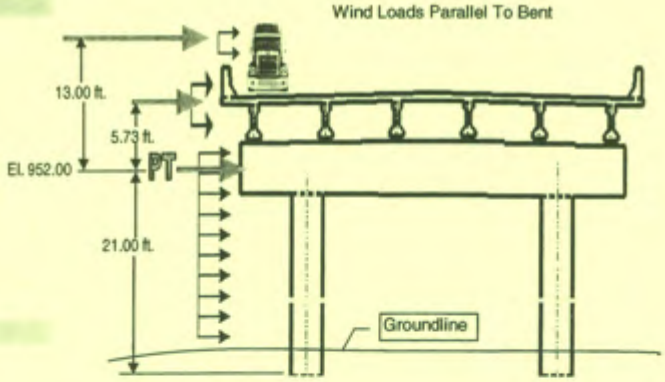
Pile Capacity:

TYPE		14 X 73	STEEL HP	
ALLOWABLE LOAD		192	KIPS =	96 TONS
UPLIFT		0	KIPS =	

WIND ON SUPERSTRUCTURE — AASHTO 3.15.2.1.1

	Left Span	Rigtht Span	
Parapet Height =	32 in.	32 in.	
Beam Height =	48 in.	48 in.	
'D' or 'H' Dimension =	9.5 in.	9.5 in.	
Beam + Coping + Slab =	4.79 ft.	4.79 ft.	
Total Height =	7.46 ft.	7.46 ft.	
Span Lengths =	95.00 ft.	95.00 ft.	TOTAL
Wind Force Area =	354.3 ft^2	354.3 ft^2	709 ft^2
Height of Cap =	4.00 ft.	4.00 ft.	
Wind Force Arm =	5.73 ft.		

Wind Loads Parallel To Bent

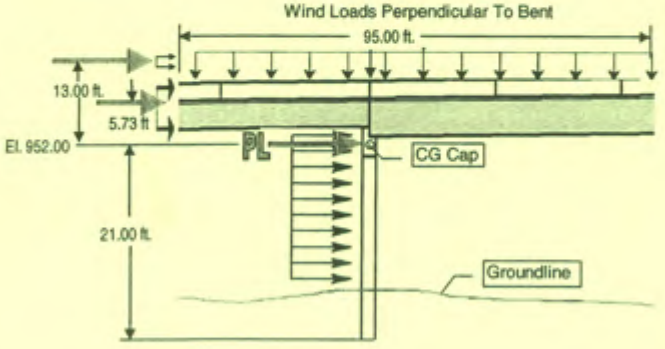


WIND ON SUBSTRUCTURE: — AASHTO 3.15.2.2

Wind Force =	0.040	ksf	PARA. & PERP.
Length of Cap =	49.00	ft.	
Width of Cap =	3.50	ft.	
CG of Cap ELEV =	952.00		
Ground Line ELEV=	933.00		
100 YR Scour ELEV =	0.00		
Depth to Point of Fixity =	2.00		
Pt. of Fixity ELEV =	931.00		
Bot. Cap to Pt. of Fixity =	19.00	ft.	
Design Height of Column =	21.00	ft.	CG Cap to Pt. of Fixity
Exposed Height of Column =	17.00	ft.	
Width of Column =	3.50	ft.	
Depth of Column =	3.50	ft.	
No. of Columns =	2	columns	

	PARA.	PERP.	
M_{CAP} =	11.76	164.64	k-ft.
M_{COL} =	24.99	49.98	k-ft.
M_{TOTAL} =	36.75	214.62	k-ft.
	PT = 1.75	PL = 10.22	kips

Wind Loads Perpendicular To Bent



BRIDGE: **I-75 over Noonday Creek**
COUNTY: **COBB**
P.I. NO: **713640**
PROJECT: **NH000-0575-01(028)**

J.B. TRIMBLE, INC.

JOB NO: **31-6036**
DESIGNED BY: **SHG**
DATE: **10/24/2009**

PIER DESIGN CALCULATIONS

BENT 3

WIND ON LIVE LOAD — AASHTO 3.15.2.1.2

Length =	95.00	ft.			
APT = APL =	12.79	ft.	Use-->	13.00	ft.

TRACTION FORCE: For One lane — AASHTO 3.9

LF = **0.00** k

TEMPERATURE FORCE: — AASHTO 3.16

Friction Force due to Temperature:

Δ = Temp. Deflection = ALPHA x Length x Change in Temp.

T_{RISE} =	30	° T_{FALL} =	40	° (Fahrenheit)
Material (C or S):	C	ALPHA =	0.000006	/ ° (Fahrenheit)

Force in Pad = Fs = [G x L x W x Deflection] / (Telas)

	LEFT	RIGHT	
Expansion Length =	0.00	95.00	ft
Δ =	0.000	0.274	in
G = Shear Modulus of Pad =	200	200	psi
L= Length of Pad =	10.50	10.50	in
W = Width of Pad =	12.00	12.00	in
Telas = Bearing Elastomer Depth =	4.250	4.250	in
Fs =	0.00	1.62	KIPS /pad
No. of Beams =	6	6	
Total Temperature Force =	0.00	9.73	kips @ top of seat
	0.00	10.66	kips @ center of cap
P_L =	0.00	9.54	kips
P_T =	0.00	4.76	kips

Difference =	P_L =	9.54	kips	AT CL CAP	
	P_T =	4.76	kips	AT CL CAP	
	P_L =	10.34	kips	AT CL CAP ----->	Use Total Lateral Force
	P_T =	5.15	kips	AT CL CAP	= PL + Equiv. Lateral Force from MDL due to eccentricity

Expansion of Concrete Cap =	**0.00018**	in/in	
Contraction of Concrete Cap =	**0.00044**	in/in	which includes 0.0002 for creep

STREAM FORCE: — AASHTO 3.18.1

100 yr Flood ELEV. =	942.5	ft.	
Point of Fixity =	21.00	ft.	
Bottom of Stream ELEV =	933.00	ft.	
Pt. of Fixity ELEV =	931.00		
V_{AVG} =	4.46	FPS @ 100 yr. Flood	
K =	1.4	for square ended piers	
$P_{AVG} = K * (V_{AVG})^2$ =	27.85	psf	AASHTO Eq. (3-4)
$P_{MAX} = 2 * P_{AVG}$ =	55.70	psf	
Piers Aligned with streaam flow:			
P_S =	0.926	kips	
M =	7.72	k-ft.	
$P_{CL\ CAP}$ =	0.367	k	

BRIDGE: **I-75 over Noonday Creek**
COUNTY: **COBB**
P.I. NO: **713640**
PROJECT: **NH000-0575-01(028)**

J.B. TRIMBLE, INC.

JOB NO: **31-6036**
DESIGNED BY: **SHG**
DATE: **10/24/2009**

PIER DESIGN CALCULATIONS

BENT 3

DEAD LOAD: AASHTO 3.3

LENGTH = 49.00 feet
STEP HT = 0.000 ft
STEP WT = 1.667 ft
SKEW = 63.50 degrees

SPAN 3

BEAM	BEAM SPACING	DISTANCE BETWEEN	DISTANCE ALONG	R dl	Add'l DL	DL
1		1.685	1.685	104.0	0.00	104.0
2	8.167	9.126	10.811	104.0	0.00	104.0
3	8.167	9.126	19.937	95.6	0.00	95.6
4	8.167	9.126	29.063	95.6	0.00	95.6
5	8.167	9.126	38.189	83.8	0.00	83.8
6	8.167	9.126	47.315	83.8	0.0	83.8
		1.685	49.000			
TOTAL		49.000				566.8
					CL Brg to CL Bent =	0.583

SPAN 4

BEAM	BEAM SPACING	DISTANCE BETWEEN	DISTANCE ALONG	R dl	Add'l DL	DL
1		1.685	1.685	104.0	0.00	104.0
2	8.167	9.126	10.811	104.0	0.0	104.0
3	8.167	9.126	19.937	95.6	0.0	95.6
4	8.167	9.126	29.063	95.6	0.0	95.6
5	8.167	9.126	38.189	83.8	0.0	83.8
6	8.167	9.126	47.315	83.8	0.00	83.8
		1.685	49.000			
TOTAL		49.000				566.8
					CL Brg to CL Bent =	0.583
COMBINED LOADS						1133.5

COLUMN = 1.750 FT - checking ¼ points on column

	POINT	MEMBER		DISTANCE ALONG	R dl	Add'l DL	DL	CHECK POINT
9.75								
	G1	1	8.065	1.685	208.0	0.0	208.0	1
	EC	1	7.190	8.875				2
29.50								
	EC	2	0.875	10.625				3
	G2	2	0.186	10.811	208.0	0.0	208.0	4
	CHECK	2	4.563	15.374				5
	G3	2	4.563	19.937	191.1	0.0	191.1	6
	CHECK	2	4.563	24.500				7
	G4	2	4.563	29.063	191.1	0.0	191.1	8
	CHECK	2	4.563	33.626				9
	G5	2	9.126	38.189	167.7	0.0	167.7	9
	EC	2	0.186	38.375				10
9.75								
	EC	3	0.875	40.125				11
	G6	3	7.190	47.315	167.7	0.0	167.7	12
				1.685				
			49.000					

ADDITIONAL DL MOMENT DUE TO ECCENTRICITY:

M_{DL} = 0.00 KIP-FT

(EQUIV. LONG FORCE) $F_{EL} = M_{DL} / H_{DESIGN\ OF\ COLUMN}$ = 0.00 KIP

(TOTAL LONG FORCE) $F_L = F_{EL} + P_{L\ TEMP}$ = 10.34 KIP

LIVE LOADS: AASHTO 3.4

	LEFT	RIGHT			
Span Lengths =	95.00	95.00	ft.		
LIVE LOAD REACTION		66.11	KIPS	AXLE LOAD NO IMPACT	VERIFY !!!!
		86.80	KIPS	LANE LOAD NO IMPACT	
AVERAGE IMPACT		1.23			
P-LOAD FOR BRLLCA INPUT		53	KIPS		

CENTRIFUGAL FORCE: AASHTO 3.10

LIVE LOAD REACTION = 66.11 KIPS AXLE LOAD NO IMPACT
Speed (S) = 70 mph
Curve Radius (R) = 3880 ft.
$C = 6.68\ S^2 / R$ = 8.44 %
Cent. Force @ 6ft above Rdwy = 5.58 kips

CALCULATION COVER SHEET

PROJECT	JOB NO.	CALC NO.	SHEET
I-75 / I-575 NORTHWEST CORRIDOR	NH000-0073-03(242)	BR#31	1

SUBJECT	DISCIPLINE
Live Load Case Output	STRUCTURAL

CALCULATION STATUS DESIGNATION	PRELIMINARY	CONFIRMED	SUPSEDED	VOIDED	INCOMPLETE
	☐	☐	☐	☐	X

COMPUTER PROGRAM/TYPE	SCP	MAINFRAME	PC	PROGRAM	VERSION/RELEASE NO.
	X YES ◯ NO	◯	X	GDOT BRLLCA	06/26/2008

Note 1: Georgia Department of Transportation (GDOT) terminated Contract Number TOURDPPI60072 for its convenience the completion of all work under that contract and directed that the work with respect to these calculations be discontinued.
(a) These calculations were not completed at the time of GDOT's direction and the information contained herein is not and/or has not been fully verified or checked. These calculations are a work-in-progress and are presented only as such.
(b) Any user is cautioned that the use of these calculations and any related information or calculations, without access to factors and without proper regard for their purpose, could lead to erroneous conclusions.
(c) If any such calculations or any information contained herein is used in future work efforts or any follow on design work a complete confirmation of the information contained herein should be performed prior to any such use.
(d) GTP has no responsibility for the use of this information not under its direct control.

Live Load Case ouptput is included for bents 2 and 3.

A	As per GDOT's termination for convenience direction	5	5	JCR			11/30/09
NO.	REASON FOR REVISION	TOTAL NO. OF SHEETS	LAST SHEET NO.	BY	CHECKED	APPROVED/ ACCEPTED	DATE

RECORD OF REVISIONS

CALCULATION SHEET

PROJECT: I-75 / I-575 NORTHWEST CORRIDOR
JOB NUMBER NH000-0073-03(242)
CALC NO. BR#31

SUBJECT: Live Load Case Output - Bent 2 SHEET NO.
BY: JCR DATE: 11/30/2009 SHEET REV.

Sufficient sample calculations representative of the scope and conditions in the design calculation were performed and the results compared to demonstrate the computer program adequacy.

17-OCT-09
12:22:53

GEORGIA DEPARTMENT OF TRANSPORTATION
PRECONSTUCTION DIVISION - OFFICE OF BRIDGE & STRUCTURAL DESIGN
SUMMARY OF THE LIVE LOAD CASE PROGRAM
REVISED: JUNE 26, 2008

PROB. NO.

I-75 OVER NOONDAY CREEK - BT 2

BRIDGE WIDTH	X1	X2	CENTER LINE DISTANCE	# OF BEAMS	REACTION FORCE	MAXIMUM # OF TRUCKS	# OF COLUMNS	COLUMN WIDTH	SKEW ANGLE
47.000	3.500	0.000	23.500	7	51.000	3	0	0.000	0

D1	D2	D3	D4	D5	D6	D7	D8	D9	D10	D11	D12	D13	D14	D15	D16	D17	D18	D19	D20
3.500	7.750	7.750	7.750	7.750	7.750	4.750													

	NO. OF TRUCKS	BEAM 1	BEAM 2	BEAM 3	BEAM 4	BEAM 5	BEAM 6	BEAM 7	BEAM 8	BEAM 9	BEAM 10
LL CASE 1	1	62.516	39.484	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
LL CASE 2	2	62.516	75.677	62.516	3.290	0.000	0.000	0.000	0.000	0.000	0.000
LL CASE 3	3	62.516	75.677	83.903	65.806	18.097	0.000	0.000	0.000	0.000	0.000
LL CASE 4	1	0.000	0.000	0.000	0.000	8.226	42.774	51.000	0.000	0.000	0.000
LL CASE 5	2	0.000	0.000	0.000	23.032	70.742	59.226	51.000	0.000	0.000	0.000
LL CASE 6	3	0.000	0.000	37.839	85.548	72.387	59.226	51.000	0.000	0.000	0.000
LL CASE 7	1	0.000	0.000	19.742	62.516	19.742	0.000	0.000	0.000	0.000	0.000
LL CASE 8	2	0.000	34.548	82.258	67.452	19.742	0.000	0.000	0.000	0.000	0.000
LL CASE 9	3	0.000	34.548	82.258	72.387	82.258	34.548	0.000	0.000	0.000	0.000
LL CASE 10	2	0.000	23.032	70.742	78.968	31.258	0.000	0.000	0.000	0.000	0.000
LL CASE 11	3	37.839	85.548	72.387	78.968	31.258	0.000	0.000	0.000	0.000	0.000
LL CASE 12	2	62.516	39.484	0.000	0.000	8.226	42.774	51.000	0.000	0.000	0.000
LL CASE 13	3	62.516	75.677	62.516	3.290	8.226	42.774	51.000	0.000	0.000	0.000

PJC
10/24/09

CALCULATION SHEET

PROJECT: I-75 / I-575 NORTHWEST CORRIDOR
JOB NUMBER NH000-0073-03(242)
CALC NO. BR#31

SUBJECT: Live Load Case Output - Bent 3 SHEET NO.
BY: JCR DATE: 11/30/2009 SHEET REV.

Sufficient sample calculations representative of the scope and conditions in the design calculation were performed and the results compared to demonstrate the computer program adequacy.

17-OCT-09
12:23:53

GEORGIA DEPARTMENT OF TRANSPORTATION
PRECONSTUCTION DIVISION - OFFICE OF BRIDGE & STRUCTURAL DESIGN
SUMMARY OF THE LIVE LOAD CASE PROGRAM
REVISED: JUNE 26, 2008

PROB. NO.

I-75 OVER NOONDAY CREEK - BT 3

BRIDGE WIDTH	X1	X2	CENTER LINE DISTANCE	# OF BEAMS	REACTION FORCE	MAXIMUM # OF TRUCKS	# OF COLUMNS	COLUMN WIDTH	SKEW ANGLE
49.000	3.500	0.000	24.500	7	53.000	3	0	0.000	0

D1	D2	D3	D4	D5	D6	D7	D8	D9	D10	D11	D12	D13	D14	D15	D16	D17	D18	D19	D20
3.500	8.167	8.167	8.167	8.167	8.167	4.665													

	NO. OF TRUCKS	BEAM 1	BEAM 2	BEAM 3	BEAM 4	BEAM 5	BEAM 6	BEAM 7	BEAM 8	BEAM 9	BEAM 10
LL CASE 1	1	67.063	38.937	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
LL CASE 2	2	67.063	82.209	62.728	0.000	0.000	0.000	0.000	0.000	0.000	0.000
LL CASE 3	3	67.063	82.209	91.937	67.063	9.728	0.000	0.000	0.000	0.000	0.000
LL CASE 4	1	0.000	0.000	0.000	0.000	8.664	44.336	53.000	0.000	0.000	0.000
LL CASE 5	2	0.000	0.000	0.000	20.559	75.726	62.715	53.000	0.000	0.000	0.000
LL CASE 6	3	0.000	0.000	32.454	87.622	82.209	62.715	53.000	0.000	0.000	0.000
LL CASE 7	1	0.000	0.000	19.469	67.063	19.469	0.000	0.000	0.000	0.000	0.000
LL CASE 8	2	0.000	31.364	86.531	74.636	19.469	0.000	0.000	0.000	0.000	0.000
LL CASE 9	3	0.000	31.364	86.531	82.209	86.531	31.364	0.000	0.000	0.000	0.000
LL CASE 10	2	0.000	21.636	76.804	84.364	29.196	0.000	0.000	0.000	0.000	0.000
LL CASE 11	3	33.531	88.699	82.209	84.364	29.196	0.000	0.000	0.000	0.000	0.000
LL CASE 12	2	67.063	38.937	0.000	0.000	8.664	44.336	53.000	0.000	0.000	0.000
LL CASE 13	3	67.063	82.209	62.728	0.000	8.664	44.336	53.000	0.000	0.000	0.000

10/26/09

CALCULATION COVER SHEET

PROJECT	JOB NO.	CALC NO.	SHEET
I-75 / I-575 NORTHWEST CORRIDOR	NH000-0073-03(242)	BR#31	1

SUBJECT	DISCIPLINE
Intermediate Bent Design Output	STRUCTURAL

CALCULATION STATUS DESIGNATION	PRELIMINARY	CONFIRMED	SUPSEDED	VOIDED	INCOMPLETE
	☐	☐	☐	☐	X

COMPUTER PROGRAM/TYPE	SCP	MAINFRAME	PC	PROGRAM	VERSION/RELEASE NO.
	(X) YES ( ) NO	( )	(X)	GDOT BRPIER	06/26/2008

Note 1: Georgia Department of Transportation (GDOT) terminated Contract Number TOURDPPI60072 for its convenience the completion of all work under that contract and directed that the work with respect to these calculations be discontinued.
(a) These calculations were not completed at the time of GDOT's direction and the information contained herein is not and/or has not been fully verified or checked. These calculations are a work-in-progress and are presented only as such.
(b) Any user is cautioned that the use of these calculations and any related information or calculations, without access to factors and without proper regard for their purpose, could lead to erroneous conclusions.
(c) If any such calculations or any information contained herein is used in future work efforts or any follow on design work a complete confirmation of the information contained herein should be performed prior to any such use.
(d) GTP has no responsibility for the use of this information not under its direct control.

Intermediate bent design ouptput is included for bents 2 and 3.

NO.	REASON FOR REVISION	TOTAL NO. OF SHEETS	LAST SHEET NO.	BY	CHECKED	APPROVED/ ACCEPTED	DATE
A	As per GDOT's termination for convenience direction	13	13	JCR			11/30/09

RECORD OF REVISIONS

CALCULATION SHEET

PROJECT: I-75 / I-575 NORTHWEST CORRIDOR
JOB NUMBER NH000-0073-03(242)
CALC NO. BR#31

SUBJECT: Bent Design Output - Bent 2 SHEET NO.
BY: JCR DATE: 11/30/2009 SHEET REV.

Sufficient sample calculations representative of the scope and conditions in the design calculation were performed and the results compared to demonstrate the computer program adequacy.

GEORGIA DEPARTMENT OF TRANSPORTATION
PRECONSTUCTION DIVISION - OFFICE OF BRIDGE & STRUCTURAL DESIGN
THE ANALYSIS AND DESIGN OF PIERS FOR BRIDGES - V 4.2.07 - AASHTO SPECS 1984 INTERIM
REVISED: JUNE 30, 2008
I-75 OVER NOONDAY CREEK - BENT 2

PROB. NO.
DSC 10/24/09

DESIGN DATA

DESIGN OPTIONS	NO. CAN	NO. COL	NO. LLC	SKEW ANG D M S	F'C PSI	FC PSI	N	FY PSI	FS PSI	EC KSI	ES KSI	CONC. STRAIN	Z FACT	* * * CAP REINFORCING STEEL * * * MAIN SIZE	STR SIZ	MAX TOP	MAX BOT	MIN SIZE	MIN NO.	TOP CL.	MIN S.SP	CAP DEPTH INCR.	BOT CL.
D D D L	2	2	13	0-00-00	3500.	1400.	8.	60000.	24000.	3587.	29000.	0.0030	170.	11	5	10	11	6	4	2.00	4.00	3.00	2.00

COLUMN REINFORCING STEEL MIN.P	MAX.P	CL.SP.	CLEAR	R MODE	KL COEF	OC	OF	CM	BD1	BD2	IMPACT %	SOIL WT KCF	ALL.S.P. KSF	MIN PL	SP	MAX PL	SP	EDGE DIST	PILE DEPTH	REBAR CLEAR	ALL.PILE CAPACITY	ALL.PILE UPLIFT	I P
1.00	8.00	2.25	2.625	2	2.00	0.00	0.90	0.00	1.00	0.00	24.00	0.120	0.000	3.00	5.00	1.500	1.000	1.000	192.000	0.000	P

CAP DATA

CN	C	L	A	DE	BC	BE	DH	LH	XB1	XB2	XB3	XB4	XB5	XB6	XB7	XB8
11	C	8.250	0.000	4.000	3.500	0.000	0.000	0.000	6.625	5.750						
12	C	25.500	0.000	4.000	3.500		0.000	0.000	0.875	0.250	3.875	3.875	3.875	3.875	7.750	0.250
13	C	8.250	0.000	4.000	3.500	0.000	0.000	0.000	0.875	5.750						

COLUMN DATA

CN	P	I	T	S	HT	A	DT	BT	DB	BB	DL	FLEX	ND	NB	SZ	ND	NB	SZ	ND	NB	SZ	ND	NB	SZ	SLOPE	EP	AP
21	0	C	T		19.000	0.000	3.500	3.500	0.000	0.000	2.000	0.000	2	4	11	0	0	0	99	99	11	0	0	0	0.000	0.000	0.000
22	0	C	T		19.000	0.000	3.500	3.500	0.000	0.000	2.000	0.000	2	4	11	0	0	0	99	99	11	0	0	0	0.000	0.000	0.000

FOOTING DATA

CN	S/P	B	D	T	DEL.B	DEL.D	DEL.T	R.B/D	R.D/B	S.HT.	NP	SYM.	BP	DP	SET.
31	P	6.000	6.000	3.500	0.500	0.500	0.500	0.000	0.000	0.000	4	1	0.000	0.000	0.000
32	P	6.000	6.000	3.500	0.500	0.500	0.500	0.000	0.000	0.000	4	1	0.000	0.000	0.000

GROUP II WIND

SUPERSTRUCTURE AREA* TRANS.	LONG.	STD. WIND	WIND ON SUPERSTRUCTURE INTENSITIES FT1	FL1	FT2	FL2	FT3	FL3	FT4	FL4	FT5	FL5	* WIND FORCE ARM APT	APL	* WIND ON PIER PT	PL
655.	655.	1	50	0	44	6	41	12	33	16	17	19	5.729	5.729	1.610	8.820

GROUP III WIND

STD. WIND	WIND ON SUPERSTRUCTURE INTENSITIES FT1	FL1	FT2	FL2	FT3	FL3	FT4	FL4	FT5	FL5	* STD. WIND	WIND ON LIVE LOAD INTENSITIES FT1	FL1	FT2	FL2	FT3	FL3	FT4	FL4	FT5	FL5	* LENGTHS OF LL TRANS.	LONGI.	* WIND ON LL ARMS APT	APL
50	0	44	6	41	12	33	16	17	19		1	100	0	88	12	82	24	66	32	34	38	87.9	87.9	13.000	13.000

MISCELLANEOUS FORCES

CENTRI. FT	TRACTION FORCE AND ARMS FL	APT	APL	EXPANSION COEFFICIENT	SHRINKAGE COEFFICIENT	STREAM FLOW PT	PL
5.560	0.000	13.000	13.000	0.00018000	0.00044000	1.056	5.885

DEAD LOAD SUPERSTRUCTURE AND LIVE LOAD CASES

I.D.	NL	P1	P2	P3	P4	P5	P6	P7	P8	P9	P10	P11	P12
D.L.	0	154.900	0.000	0.000	154.900	0.000	166.600	0.000	166.600	175.100	0.000	0.000	175.100
LL 1	1	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	39.483	0.000	0.000	62.516
LL 2	2	0.000	0.000	0.000	0.000	0.000	3.290	0.000	62.516	75.677	0.000	0.000	62.516
LL 3	3	0.000	0.000	0.000	18.096	0.000	65.806	0.000	83.903	75.677	0.000	0.000	62.516
LL 4	1	42.774	0.000	0.000	8.225	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
LL 5	2	59.225	0.000	0.000	70.741	0.000	23.032	0.000	0.000	0.000	0.000	0.000	0.000
LL 6	3	59.225	0.000	0.000	72.387	0.000	85.548	0.000	37.838	0.000	0.000	0.000	0.000
LL 7	1	0.000	0.000	0.000	19.741	0.000	62.516	0.000	19.741	0.000	0.000	0.000	0.000
LL 8	2	0.000	0.000	0.000	19.741	0.000	67.451	0.000	82.258	34.548	0.000	0.000	0.000
LL 9	3	34.548	0.000	0.000	82.258	0.000	72.387	0.000	82.258	34.548	0.000	0.000	0.000
LL10	2	0.000	0.000	0.000	31.258	0.000	78.967	0.000	70.741	23.032	0.000	0.000	0.000
LL11	3	0.000	0.000	0.000	31.258	0.000	78.967	0.000	72.387	85.548	0.000	0.000	37.838
LL12	2	42.774	0.000	0.000	8.225	0.000	0.000	0.000	0.000	39.483	0.000	0.000	62.516
LL13	3	42.774	0.000	0.000	8.225	0.000	3.290	0.000	62.516	75.677	0.000	0.000	62.516

MEMBER PROPERTIES

COLUMN PROPERTIES

CN	KT / KTM	COTB / COBT	COTBM / COBTM	TLR / TRL	TRC / TCR	TLC / TCL	DFC / DFL	KL / PDF	FKBR / FKUBR	PCBR / PCUBR	PCL / FLU	UFMT / UFMB	EITTB / EILTB	PSIT / PSIB	RGTB / RGL
	1359850.6	0.5000	0.5000	0.4913	1.0000	0.5087	0.5087	0.065635	9.8	208179.9	12187.1	107356.6	313663.1	0.6	12.4
	1359850.6	0.5000	0.2814	0.0000	1.0000	0.0000	0.0000	0.5000	19.7	51658.3	17.0	107356.6	313663.1	0.0	12.4
2	1359850.6	0.5000	0.5000	0.0000	0.5087	1.0000	0.5087	0.065635	9.8	208179.9	12187.1	107356.6	313663.1	0.6	12.4
	1359850.6	0.5000	0.2814	0.4913	0.0000	1.0000	0.4913	0.5000	19.7	51658.3	17.0	107356.6	313663.1	0.0	12.4

CAP PROPERTIES

CN	CO / K	KML / KMR	COMLR / COMRL	FMWT / UFEM	FMLP1 / FMRP1	FMLP2 / FMRP2	FMLP3 / FMRP3	FMLP4 / FMRP4	FMLP5 / FMRP5	FMLP6 / FMRP6	FMLP7 / FMRP7	FMLP8 / FMRP8
2	0.5000	1313348.0	0.2726	113.7938	0.8160	1.0279	3.2314	3.7723	3.1875	2.0138	0.0474	0.0290
	1512448.0	1313348.0	0.2726	88967.5	0.0290	0.0474	0.7882	2.0138	3.1875	3.7723	1.0279	0.8160

COLUMN MOMENTS(KIP-FEET), SHEARS(KIPS), REACTIONS(KIPS)

LOAD	COL	TRANSVERSE PC	TRANSVERSE MT	TRANSVERSE V	TRANSVERSE MB	TRANSVERSE RF	TRANSVERSE ML	TRANSVERSE MR	* MT	LONGITUDINAL V	LONGITUDINAL MB	LONGITUDINAL MF
UNIT F.AT CL.CAP	1	0.324	4.131	0.500	5.369	0.324	0.000	-4.131	1.000	0.500	9.500	9.500
	2	-0.324	4.131	0.500	5.369	-0.324	-4.131	0.000	1.000	0.500	9.500	9.500
EXPANSION OF CAP	1	0.000	88.050	13.435	167.217	0.000	0.000	-88.050	0.000	0.000	0.000	0.000
	2	0.000	-88.050	-13.435	-167.217	0.000	88.050	0.000	0.000	0.000	0.000	0.000
SHRINKAGE OF CAP	1	0.000	-215.234	-32.841	-408.752	0.000	0.000	215.234	0.000	0.000	0.000	0.000
	2	0.000	215.234	32.841	408.752	0.000	-215.234	0.000	0.000	0.000	0.000	0.000
DEAD LOAD TOTAL	1	516.726 547.963	65.659	4.597	21.685	547.963	1097.678	-1163.337	0.000	0.000	0.000	0.000
	2	564.674 595.912	-50.800	-4.597	-36.545	595.912	1282.303	-1231.503	0.000	0.000	0.000	0.000
STREAM FLOW	1	0.342	4.362	0.528	5.670	0.342	0.000	-4.362	5.885	2.943	55.908	55.908
	2	-0.342	4.362	0.528	5.670	-0.342	-4.362	0.000	5.885	2.943	55.908	55.908
CENT. FORCE 1 LN	1	4.636	22.968	2.780	29.852	4.636	0.000	-22.968	0.000	0.000	0.000	0.000
	2	-4.636	22.968	2.780	29.852	-4.636	-22.968	0.000	0.000	0.000	0.000	0.000
) ON SUBSTR.	1	0.522	6.651	0.805	8.644	0.522	0.000	-6.651	-8.820	-4.410	-83.790	-83.790
	2	-0.522	6.651	0.805	8.644	-0.522	-6.651	0.000	-8.820	-4.410	-83.790	-83.790
GROUP 2 WIND 1 1	1	18.490	141.940	17.180	184.480	18.490	0.000	-141.940	-8.820	-4.410	-83.790	-83.790
	2	-18.490	141.940	17.180	184.480	-18.490	-141.940	0.000	-8.820	-4.410	-83.790	-83.790
GROUP 2 WIND 1 2	1	18.490	141.940	17.180	184.480	18.490	0.000	-141.940	8.820	4.410	83.790	83.790
	2	-18.490	141.940	17.180	184.480	-18.490	-141.940	0.000	8.820	4.410	83.790	83.790
GROUP 2 WIND 2 1	1	16.334	125.705	15.215	163.380	16.334	0.000	-125.705	-24.007	-6.375	-132.382	-132.382
	2	-16.334	125.705	15.215	163.380	-16.334	-125.705	0.000	-24.007	-6.375	-132.382	-132.382
GROUP 2 WIND 2 2	1	16.334	125.705	15.215	163.380	16.334	0.000	-125.705	24.007	6.375	132.382	132.382
	2	-16.334	125.705	15.215	163.380	-16.334	-125.705	0.000	24.007	6.375	132.382	132.382
GROUP 2 WIND 3 1	1	15.256	117.588	14.233	152.829	15.256	0.000	-117.588	-39.195	-8.340	-180.975	-180.975
	2	-15.256	117.588	14.233	152.829	-15.256	-117.588	0.000	-39.195	-8.340	-180.975	-180.975
GROUP 2 WIND 3 2	1	15.256	117.588	14.233	152.829	15.256	0.000	-117.588	39.195	8.340	180.975	180.975
	2	-15.256	117.588	14.233	152.829	-15.256	-117.588	0.000	39.195	8.340	180.975	180.975
GROUP 2 WIND 4 1	1	12.381	95.942	11.613	124.696	12.381	0.000	-95.942	-49.320	-9.650	-213.370	-213.370
	2	-12.381	95.942	11.613	124.696	-12.381	-95.942	0.000	-49.320	-9.650	-213.370	-213.370
GROUP 2 WIND 4 2	1	12.381	95.942	11.613	124.696	12.381	0.000	-95.942	49.320	9.650	213.370	213.370
	2	-12.381	95.942	11.613	124.696	-12.381	-95.942	0.000	49.320	9.650	213.370	213.370
GROUP 2 WIND 5 1	1	6.631	52.649	6.372	68.428	6.631	0.000	-52.649	-56.914	-10.632	-237.666	-237.666
	2	-6.631	52.649	6.372	68.428	-6.631	-52.649	0.000	-56.914	-10.632	-237.666	-237.666
GROUP 2 WIND 5 2	1	6.631	52.649	6.372	68.428	6.631	0.000	-52.649	56.914	10.632	237.666	237.666
	2	-6.631	52.649	6.372	68.428	-6.631	-52.649	0.000	56.914	10.632	237.666	237.666
GROUP 3 WIND 1 1	1	12.876	78.893	9.549	102.538	12.876	0.000	-78.893	-2.646	-1.323	-25.137	-25.137
	2	-12.876	78.893	9.549	102.538	-12.876	-78.893	0.000	-2.646	-1.323	-25.137	-25.137
GROUP 3 WIND 1 2	1	12.876	78.893	9.549	102.538	12.876	0.000	-78.893	2.646	1.323	25.137	25.137
	2	-12.876	78.893	9.549	102.538	-12.876	-78.893	0.000	2.646	1.323	25.137	25.137
JP 3 WIND 2 1	1	11.350	69.666	8.432	90.544	11.350	0.000	-69.666	-15.113	-2.440	-56.592	-56.592
	2	-11.350	69.666	8.432	90.544	-11.350	-69.666	0.000	-15.113	-2.440	-56.592	-56.592
GROUP 3 WIND 2 2	1	11.350	69.666	8.432	90.544	11.350	0.000	-69.666	15.113	2.440	56.592	56.592
	2	-11.350	69.666	8.432	90.544	-11.350	-69.666	0.000	15.113	2.440	56.592	56.592

COLUMN MOMENTS(KIP-FEET), SHEARS(KIPS), REACTIONS(KIPS)

		TRANSVERSE						*	LONGITUDINAL			
LOAD	COL	PC	MT	V	MB	RF	ML	MR	MT	V	MB	MF
'JP 3 WIND 3 1	1	10.587	65.052	7.874	84.548	10.587	0.000	-65.052	-27.580	-3.557	-88.046	-88.046
	2	-10.587	65.052	7.874	84.548	-10.587	-65.052	0.000	-27.580	-3.557	-88.046	-88.046
GROUP 3 WIND 3 2	1	10.587	65.052	7.874	84.548	10.587	0.000	-65.052	27.580	3.557	88.046	88.046
	2	-10.587	65.052	7.874	84.548	-10.587	-65.052	0.000	27.580	3.557	88.046	88.046
GROUP 3 WIND 4 1	1	8.552	52.748	6.384	68.557	8.552	0.000	-52.748	-35.892	-4.301	-109.016	-109.016
	2	-8.552	52.748	6.384	68.557	-8.552	-52.748	0.000	-35.892	-4.301	-109.016	-109.016
GROUP 3 WIND 4 2	1	8.552	52.748	6.384	68.557	8.552	0.000	-52.748	35.892	4.301	109.016	109.016
	2	-8.552	52.748	6.384	68.557	-8.552	-52.748	0.000	35.892	4.301	109.016	109.016
GROUP 3 WIND 5 1	1	4.481	28.141	3.406	36.574	4.481	0.000	-28.141	-42.126	-4.860	-124.743	-124.743
	2	-4.481	28.141	3.406	36.574	-4.481	-28.141	0.000	-42.126	-4.860	-124.743	-124.743
GROUP 3 WIND 5 2	1	4.481	28.141	3.406	36.574	4.481	0.000	-28.141	42.126	4.860	124.743	124.743
	2	-4.481	28.141	3.406	36.574	-4.481	-28.141	0.000	42.126	4.860	124.743	124.743
LIVE LOAD LL 1	1	-12.581	-94.971	-9.429	-84.183	-12.581	0.000	94.971	0.000	0.000	0.000	0.000
	2	114.580	143.901	9.429	35.253	114.580	270.268	-414.168	0.000	0.000	0.000	0.000
LIVE LOAD LL 2	1	12.205	30.781	1.217	-7.658	12.205	0.000	-30.781	0.000	0.000	0.000	0.000
	2	191.794	-0.049	-1.217	-23.074	191.794	414.218	-414.168	0.000	0.000	0.000	0.000
LIVE LOAD LL 3	1	70.348	179.004	12.623	60.835	70.348	0.000	-179.004	0.000	0.000	0.000	0.000
	2	205.050	-140.781	-12.623	-99.058	205.050	513.532	-372.752	0.000	0.000	0.000	0.000
LIVE LOAD LL 4	1	60.342	-106.151	-6.964	-26.166	60.342	283.378	-177.227	0.000	0.000	0.000	0.000
	2	-9.343	70.272	6.964	62.045	-9.343	-70.272	0.000	0.000	0.000	0.000	0.000
LIVE LOAD LL 5	1	155.804	-77.217	-4.643	-10.996	155.804	392.366	-315.148	0.000	0.000	0.000	0.000
	2	-2.806	40.401	4.643	47.813	-2.806	-40.401	0.000	0.000	0.000	0.000	0.000
LIVE LOAD LL 6	1	190.381	101.574	9.119	71.679	190.381	353.129	-454.703	0.000	0.000	0.000	0.000
	2	39.117	-129.429	-9.119	-43.823	39.117	129.429	0.000	0.000	0.000	0.000	0.000
LIVE LOAD LL 7	1	66.982	165.914	12.612	73.713	66.982	0.000	-165.914	0.000	0.000	0.000	0.000
	2	35.016	-153.588	-12.612	-86.038	35.016	153.588	0.000	0.000	0.000	0.000	0.000
? LOAD LL 8	1	92.791	294.451	23.455	151.190	92.791	0.000	-294.451	0.000	0.000	0.000	0.000
	2	111.207	-299.736	-23.455	-145.904	111.207	299.736	0.000	0.000	0.000	0.000	0.000
LIVE LOAD LL 9	1	178.632	217.199	18.071	126.146	178.632	205.992	-423.192	0.000	0.000	0.000	0.000
	2	96.767	-240.594	-18.071	-102.751	96.767	240.594	0.000	0.000	0.000	0.000	0.000
LIVE LOAD LL10	1	107.114	298.560	23.455	147.078	107.114	0.000	-298.560	0.000	0.000	0.000	0.000
	2	96.884	-295.624	-23.455	-150.014	96.884	295.624	0.000	0.000	0.000	0.000	0.000
LIVE LOAD LL11	1	91.411	229.345	17.138	96.286	91.411	0.000	-229.345	0.000	0.000	0.000	0.000
	2	183.987	-204.829	-17.138	-120.801	183.987	430.438	-225.609	0.000	0.000	0.000	0.000
LIVE LOAD LL12	1	47.761	-201.122	-16.393	-110.349	47.761	283.378	-82.256	0.000	0.000	0.000	0.000
	2	105.237	214.172	16.393	97.298	105.237	199.996	-414.168	0.000	0.000	0.000	0.000
LIVE LOAD LL13	1	65.292	-67.833	-5.172	-30.442	65.292	255.040	-187.207	0.000	0.000	0.000	0.000
	2	164.206	63.200	5.172	35.074	164.206	309.551	-372.752	0.000	0.000	0.000	0.000

CAP ANALYSIS AND DESIGN DATA

CAP MOMENTS AND SHEARS

	MOMENTS (KIP-FEET)							** SHEARS (KIPS)					
NT	D.L.TOT.	G1 MAX.+	G1 MAX.-	G2 MAX.+	G2 MAX.-	G3 MAX.+	G3 MAX.-	DL T.LT	DL T.RT	G1 + LT	G1 + RT	G1 - LT	G1 - RT
P 1	-3.604	-3.604	-3.604	-3.604	-3.604	-3.604	-3.604	-4.436	-205.806	-4.436	-205.806	-4.436	-334.384
P 2	-1232.121	-1232.121	-1971.441	-1232.121	-1232.121	-1232.121	-1674.827	-221.504	-221.504	-221.504	-221.504	-350.081	-350.081
C 1L	-1426.981	-1426.981	-2278.807	-1426.981	-1426.981	-1426.981	-1937.057	-223.892		-223.892		-352.470	
C 1R	-1512.338	-1306.157	-2585.788	-1327.816	-1702.532	-1286.315	-2292.303		447.851		774.926		420.537
P 3	-1121.514	-939.232	-1928.644	-949.655	-1298.655	-916.840	-1732.591	445.462	445.462	772.537	772.537	418.149	418.149
P 4	-1010.234	-834.780	-1741.272	-841.993	-1183.645	-811.660	-1573.057	444.780	243.410	771.854	413.222	417.466	216.096
P 5	-87.517	170.178	-372.366	24.644	-203.124	129.132	-329.091	232.831	232.831	402.644	402.644	205.517	205.517
P 6	794.208	1683.947	553.453	850.288	736.404	1358.156	610.899	222.252	5.672	392.065	48.114	194.939	-27.490
P 7	795.692	1659.267	547.568	795.692	795.692	1312.803	647.115	-4.906	-4.906	37.536	37.536	-38.068	-38.068
P 8	756.183	1686.737	480.817	813.987	700.103	1352.545	560.123	-15.485	-232.065	26.957	-208.995	-48.647	-407.214
P 9	-1124.307	-962.171	-1875.795	-950.895	-1292.547	-920.711	-1667.811	-253.223	-480.853	-230.152	-457.782	-428.371	-806.357
P10	-1244.605	-1076.702	-2076.847	-1067.464	-1416.464	-1035.266	-1838.476	-481.535	-481.535	-458.465	-458.465	-807.040	-807.040
C 2L	-1666.994	-1478.905	-2781.873	-1476.801	-1851.516	-1437.550	-2437.148	-483.924		-460.854		-809.428	
C 2R	-1600.954	-1600.954	-2500.114	-1600.954	-1600.954	-1600.954	-2139.373		250.152		385.875		250.152
P11	-1383.116	-1383.116	-2163.518	-1383.116	-1383.116	-1383.116	-1850.423	247.764	247.764	383.486	383.486	247.764	247.764
P12	-3.605	-3.604	-3.605	-3.605	-3.605	-3.604	-3.605	232.066	4.436	367.789	4.436	232.066	4.436

CAP DESIGN DATA

PT.	M+ UNF. K-FT.	M- UNF. K-FT.	TOP REINFORCE. AS	NO.SIZE	BOT.REINFORCE. AS	NO.SIZE	LEFT STIRRUPS M.SP.	AV/IN	BAR&SPAC	RIGHT STIRRUPS M.SP.	AV/IN	BAR&SPAC	D IN.	FC PSI	PS %	FS/FF RATIO	FS/FZ RATIO
P 1	-2.773	-2.773	1.76	4 # 11	1.76	4 # 11	0.00	0.000	#5@ 0.00	21.98	0.066	#5@ 9.35	48.00		0.10	0.000	0.005
P 2	-947.785	-1288.329	10.26	7 # 11	1.76	4 # 11	22.50	0.070	#5@ 8.89	22.50	0.070	#5@ 8.89	48.00		0.60	0.607	0.963
C 1	-1068.367	-1684.417	13.66	9 # 11	1.76	4 # 11	22.50	0.071	#5@ 8.76	11.25	0.255D	#5@ 4.87	48.00		0.80	0.811	0.910
P 3	-778.741	-1259.284	10.03	7 # 11	1.76	4 # 11	11.25	0.254D	#5@ 4.89	11.25	0.254D	#5@ 4.89	48.00		0.59	0.779	0.942
P 4	-696.286	-1138.112	9.01	6 # 11	1.76	4 # 11	11.25	0.253D	#5@ 4.89	22.50	0.097	#5@ 6.38	48.00		0.52	0.844	1.039
P 5	51.378	-205.192	2.76	4 # 11	1.76	4 # 11	21.98	0.097	#5@ 6.41	21.98	0.097	#5@ 6.41	48.00		0.26	0.427	0.000
P 6	1020.758	493.900	1.76	4 # 11	8.70	6 # 11	22.50	0.088	#5@ 7.04	0.00	0.000	#5@ 0.00	48.00		0.51	0.891	0.932
P 7	1009.848	497.780	1.76	4 # 11	8.57	6 # 11	0.00	0.000	#5@ 0.00	0.00	0.000	#5@ 0.00	48.00		0.50	0.868	0.922
P 8	1016.442	454.841	1.76	4 # 11	8.72	6 # 11	0.00	0.000	#5@ 0.00	22.50	0.095	#5@ 6.55	48.00		0.51	0.929	0.928
P 9	-780.171	-1211.000	9.74	7 # 11	1.76	4 # 11	22.50	0.104	#5@ 5.97	11.25	0.269D	#5@ 4.62	48.00		0.57	0.699	0.905
P10	-869.837	-1340.733	10.84	7 # 11	1.76	4 # 11	11.25	0.269D	#5@ 4.61	11.25	0.269D	#5@ 4.61	48.00		0.63	0.803	1.002
C 2	-1184.701	-1795.836	14.78	10 # 11	1.76	4 # 11	11.25	0.270D	#5@ 4.59	22.50	0.085	#5@ 7.27	48.00		0.86	0.728	0.847
P11	-1063.935	-1423.402	11.31	8 # 11	1.76	4 # 11	22.50	0.084	#5@ 7.36	22.50	0.084	#5@ 7.36	48.00		0.66	0.560	0.895
P12	-2.773	-2.773	1.76	4 # 11	1.76	4 # 11	21.98	0.081	#5@ 7.64	0.00	0.000	#5@ 0.00	48.00		0.10	0.000	0.005

NOTE: *** PS/FZ RATIO EXCEEDS 1.0! ***

COLUMN ANALYSIS AND DESIGN OUTPUT

CRITICAL COLUMN LOADS

CN	T B	GR	LLC	WC	R	E S	C F	S F	PF	MTF	MLF	PM	MTM	MLM	PU	MTU	MLU	PU/PM	B	D
1	T	1	LL10	0.0			C	S	916.8	798.9	7.7	916.8	798.9	360.5	2083.7	1816.0	819.4	2.273	42.00	42.00
1	B	1	LL 6	0.0			C	S	1142.4	296.0	72.7	1142.4	399.8	460.4	2927.9	1028.3	1184.0	2.565	42.00	42.00
2	T	1	LL 8	0.0			C	S	963.0	-651.4	7.7	963.0	651.4	381.0	2381.6	1611.6	942.6	2.474	42.00	42.00
2	B	1	LL 3	0.0			C	S	1203.1	-150.4	72.7	1203.1	421.1	488.9	2922.1	1026.0	1191.2	2.430	42.00	42.00

COLUMN DESIGN DATA

CN	T B	B FACE 1 NO.SIZE	B FACE 2 NO.SIZE	D FACE 3 NO.SIZE	D FACE 4 NO.SIZE	AS	PS	BD12	BD	SUMPU	SUMPC	DEL.T	DEL.L	CM	R	PHIC
1	T	4 # 11	4 # 11	2 # 11	2 # 11	18.72	1.061	1.00	0.086	1889.	65190.	1.000	1.123	0.400	2	0.70
1	B	4 # 11	4 # 11	2 # 11	2 # 11	18.72	1.061	1.00	0.156	1945.	56248.	1.000	1.151	0.400	2	0.70
2	T	4 # 11	4 # 11	2 # 11	2 # 11	18.72	1.061	1.00	0.136	1889.	65137.	1.000	1.130	0.428	2	0.70
2	B	4 # 11	4 # 11	2 # 11	2 # 11	18.72	1.061	1.00	0.274	2044.	60452.	1.000	1.161	0.400	2	0.70

FOOTING 1 DESIGN LOADS

F	G	LLID	WC	ES	C	S	P	MT	VT	ML	VL	P4	P3	P2	P1	MTF	VBF	VPF	LOAD
		LL 9	0.0		C	S	704.880	209.685	27.204	55.908	2.943	118.004	102.240	174.835	190.599	16.866	0.000	-0.384	MAX.P1
1	1	LL 9	0.0		C	S	1041.819	361.198	48.059	72.680	3.825	162.662	142.169	268.218	288.710	25.905	0.000	-0.499	MAX.MT
1	1	LL 9	0.0		C	S	1041.819	361.198	48.059	72.680	3.825	162.662	142.169	268.218	288.710	25.905	0.000	-0.499	MAX.VT
1	1	LL 9	0.0		C	S	1041.819	361.198	48.059	72.680	3.825	162.662	142.169	268.218	288.710	25.905	0.000	-0.499	MAX.VP
1	1	LL 6	0.0		C	S	1062.390	265.837	32.385	72.680	3.825	184.659	164.167	254.449	274.941	21.174	0.000	-0.499	MAX.ML
1	1	LL 9	0.0		C	S	1041.819	361.198	48.059	72.680	3.825	162.662	142.169	268.218	288.710	20.774	0.000	-0.499	MAX.VL
1	4	LL 9	0.0	E	C	S	704.881	376.902	40.639	55.908	2.943	92.499	76.735	200.340	216.104	19.345	0.000	-0.384	MAX.P3

FOOTING 1 ANALYSIS/DESIGN RESULTS

FOOTING SIZE			* BAR REINFORCEMENT STEEL				* SECTION CAPACITIES				
B	D	T	P1/PA	AS	NO.SIZE	SPAC. PLACEMENT	MT.	VB	VP	DS	FC
7.200	7.200	3.500	0.993	0.22	9 # 4 @	9.500 TOP LONG	31.545	34.094	68.189	28.250	0.000
				0.27	10 # 4 @	8.625 BOT.TRAN	35.646	34.698	69.396	28.750	0.000

NUMBER OF PILES = 5 BP = 2.100 DP = 2.100

FOOTING 2 DESIGN LOADS

F	G	LLID	WC	ES	C	S	P	MT	VT	ML	VL	P4	P3	P2	P1	MTF	VBF	VPF	LOAD
2	4	LL13	0.0	S	C	S	715.477	486.763	40.450	55.908	2.943	81.618	65.854	215.459	231.223	20.815	0.000	-0.384	MAX.P1
2	4	LL13	0.0	S	C	S	930.120	632.792	52.584	72.680	3.825	106.104	85.612	280.096	300.589	27.060	0.000	-0.499	MAX.MT
2	1	LL 3	0.0		C	S	1116.971	-108.789	-17.633	72.680	3.825	220.418	199.926	240.522	261.015	23.212	0.000	-0.499	MAX.VT
2	1	LL 3	0.0		C	S	1116.971	-108.789	-17.633	72.680	3.825	220.418	199.926	240.522	261.015	23.212	0.000	-0.499	MAX.VP
		LL 3	0.0		C	S	1116.971	-108.789	-17.633	72.680	3.825	220.418	199.926	240.522	261.015	22.235	0.000	-0.499	MAX.ML
2	1	LL 3	0.0		C	S	1116.971	-108.789	-17.633	72.680	3.825	220.418	199.926	240.522	261.015	22.235	0.000	-0.499	MAX.VL
2	4	LL12	0.0	S	C	S	671.166	516.047	47.553	55.908	2.943	66.310	50.547	213.042	228.806	20.580	0.000	-0.384	MAX.P3

FOOTING 2 ANALYSIS/DESIGN RESULTS

FOOTING SIZE			* BAR REINFORCEMENT STEEL				* SECTION CAPACITIES				
B	D	T	P1/PA	AS	NO.SIZE	SPAC. PLACEMENT	MT.	VB	VP	DS	FC
7.200	7.200	3.500	0.963	0.23	9 # 4 @	9.500 TOP LONG	31.545	34.094	68.189	28.250	0.000
				0.28	11 # 4 @	7.750 BOT.TRAN	39.178	34.698	69.396	28.750	0.000

NUMBER OF PILES = 5 BP = 2.100 DP = 2.100

CALCULATION SHEET

PROJECT: I-75 / I-575 NORTHWEST CORRIDOR
JOB NUMBER NH000-0073-03(242)
CALC NO. BR#31

SUBJECT: Bent Design Output - Bent 3 SHEET NO.
BY: JCR DATE: 11/30/2009 SHEET REV.

Sufficient sample calculations representative of the scope and conditions in the design calculation were performed and the results compared to demonstrate the computer program adequacy.

28-OCT-09
07:36:45

GEORGIA DEPARTMENT OF TRANSPORTATION
PRECONSTUCTION DIVISION - OFFICE OF BRIDGE & STRUCTURAL DESIGN
THE ANALYSIS AND DESIGN OF PIERS FOR BRIDGES - V 4.2.07 - AASHTO SPECS 1984 INTERIM
REVISED: JUNE 30, 2008
I-75 OVER NOONDAY CREEK - BENT 3

PROB. NO.

PJC 10/26/09

DESIGN DATA

DESIGN OPTIONS	NO. CAN	NO. COL	NO. LLC	SKEW ANG D M S	F'C PSI	FC PSI	N	FY PSI	PS PSI	EC KSI	ES KSI	CONC. STRAIN	Z FACT	* CAP REINFORCING STEEL * MAIN SIZE	STR SIZ	MAX TOP	MAX BOT	MIN SIZE	MIN NO.	TOP CL.	MIN S.SP	CAP DEPTH INCR.	BOT CL.
D D D L	2	2	13	26-30-00	3500.	1400.	8.	60000.	24000.	3587.	29000.	0.0030	170.	11	5	10	11	6	4	2.00	4.00	3.00	2.00

COLUMN REINFORCING STEEL MIN.P	MAX.P	CL.SP.	CLEAR	R MODE	KL COEF	OC	OF	CM	BD1	BD2	IMPACT %	SOIL WT KCF	ALL.S.P. KSF	MIN PL SP	MAX PL SP	EDGE DIST	PILE DEPTH	REBAR CLEAR	ALL.PILE CAPACITY	ALL.PILE UPLIFT	I P
1.00	8.00	2.25	2.625	2	2.00	0.00	0.90	0.00	1.00	0.00	23.00	0.120	0.000	3.00	5.00	1.500	1.000	1.000	192.000	0.000	P

CAP DATA

CN	C	L	A	DE	BC	BE	DH	LH	XB1	XB2	XB3	XB4	XB5	XB6	XB7	XB8
11	C	9.750	0.000	4.250	3.500	0.000	0.000	0.000	8.065	7.190						
12	C	29.500	0.000	4.250	3.500		0.000	0.000	0.875	0.186	4.563	4.563	4.563	4.563	9.126	0.186
13	C	9.750	0.000	4.250	3.500	0.000	0.000	0.000	0.875	7.190						

COLUMN DATA

CN	P	I	T	S	HT	A	DT	BT	DB	BB	DL	FLEX	ND	NB	SZ	ND	NB	SZ	ND	NB	SZ	ND	NB	SZ	SLOPE	EP	AP
21	0	C	T		21.000	0.000	3.500	3.500	0.000	0.000	2.125	0.000	2	4	11	0	0	0	99	99	11	0	0	0	0.000	0.000	0.000
22	0	C	T		21.000	0.000	3.500	3.500	0.000	0.000	2.125	0.000	2	4	11	0	0	0	99	99	11	0	0	0	0.000	0.000	0.000

FOOTING DATA

CN	S/P	B	D	T	DEL.B	DEL.D	DEL.T	R.B/D	R.D/B	S.HT.	NP	SYM.	BP	DP	SET.
31	P	6.000	6.000	3.500	0.500	0.500	0.500	0.000	0.000	0.000	7	1	0.000	0.000	0.000
32	P	6.000	6.000	3.500	0.500	0.500	0.500	0.000	0.000	0.000	7	1	0.000	0.000	0.000

GROUP II WIND

SUPERSTRUCTURE AREA* STD. TRANS.	LONG.	WIND	WIND ON SUPERSTRUCTURE INTENSITIES FT1	FL1	FT2	FL2	FT3	FL3	FT4	FL4	FT5	FL5	* WIND FORCE ARM APT	APL	* WIND ON PIER PT	PL
709.	709.	1	50	0	44	6	41	12	33	16	17	19	5.729	5.729	1.750	10.220

GROUP III WIND

.D	* FT1	WIND ON SUPERSTRUCTURE INTENSITIES FL1	FT2	FL2	FT3	FL3	FT4	FL4	FT5	FL5	* STD. WIND	* WIND ON LIVE LOAD INTENSITIES FT1	FL1	FT2	FL2	FT3	FL3	FT4	FL4	FT5	FL5	* LENGTHS OF LL TRANS.	LONGI.	* WIND ON LL ARMS APT	APL
1	50	0	44	6	41	12	33	16	17	19	1	100	0	88	12	82	24	66	32	34	38	95.0	95.0	13.000	13.000

MISCELLANEOUS FORCES

CENTRI. FT	TRACTION FORCE AND ARMS FL	APT	APL	EXPANSION COEFFICIENT	SHRINKAGE COEFFICIENT	STREAM FLOW PT	PL
5.580	3.480	13.000	13.000	0.00018000	0.00044000	5.521	10.336

DEAD LOAD SUPERSTRUCTURE AND LIVE LOAD CASES

I.D.	NL	P1	P2	P3	P4	P5	P6	P7	P8	P9	P10	P11	P12
D.L.	0	167.700	0.000	0.000	167.700	0.000	191.100	0.000	191.100	208.000	0.000	0.000	208.000
LL 1	1	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	38.937	0.000	0.000	67.062
LL 2	2	0.000	0.000	0.000	0.000	0.000	0.000	0.000	62.727	82.209	0.000	0.000	67.062
LL 3	3	0.000	0.000	0.000	9.727	0.000	67.062	0.000	91.937	82.209	0.000	0.000	67.062
LL 4	1	44.336	0.000	0.000	8.663	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
LL 5	2	62.714	0.000	0.000	75.726	0.000	20.558	0.000	0.000	0.000	0.000	0.000	0.000
LL 6	3	62.714	0.000	0.000	82.209	0.000	87.621	0.000	32.454	0.000	0.000	0.000	0.000
LL 7	1	0.000	0.000	0.000	19.468	0.000	67.062	0.000	19.468	0.000	0.000	0.000	0.000
LL 8	2	0.000	0.000	0.000	19.468	0.000	74.636	0.000	86.531	31.363	0.000	0.000	0.000
LL 9	3	31.363	0.000	0.000	86.531	0.000	82.209	0.000	86.531	31.363	0.000	0.000	0.000
LL10	2	0.000	0.000	0.000	29.196	0.000	84.363	0.000	76.803	21.636	0.000	0.000	0.000
LL11	3	0.000	0.000	0.000	29.196	0.000	84.363	0.000	82.209	88.698	0.000	0.000	33.531
LL12	2	44.336	0.000	0.000	8.663	0.000	0.000	0.000	0.000	38.937	0.000	0.000	67.062
LL13	3	44.336	0.000	0.000	8.663	0.000	62.727	0.000	0.000	82.209	0.000	0.000	67.062

① Fixed Bearing at abt → Braking Force from 4 spans

$FL = 0.05 \times [(2 \times \frac{80^k/lf}{2}) \times 0.64' + 18^k] = 3.48^k$

(AASHTO 3.9)

MEMBER PROPERTIES

COLUMN PROPERTIES

CN	KT	COTB	COTBM	TLR	TRC	TLC	DFC	KL	FKBR	PCBR	PCL	UFMT	EITTB	PSIT	RGTB
	KTM	COBT	COBTM	TRL	TCR	TCL	DFL	PDF	FKUBR	PCUBR	FLU	UFMB	EILTB	PSIB	RGL
	1230341.0	0.5000	0.5000	0.5229	1.0000	0.4771	0.4771	0.048611	10.8	172792.2	10050.3	87881.5	313663.1	0.5	12.4
	1230341.0	0.5000	0.2969	0.0000	1.0000	0.0000	0.0000	0.5000	21.9	41904.8	18.9	87881.5	313663.1	0.0	12.4
2	1230341.0	0.5000	0.5000	0.0000	0.4771	1.0000	0.4771	0.048611	10.8	172792.2	10050.3	87881.5	313663.1	0.5	12.4
	1230341.0	0.5000	0.2969	0.5229	0.0000	1.0000	0.5229	0.5000	21.9	41904.8	18.9	87881.5	313663.1	0.0	12.4

CAP PROPERTIES

CN	CO	KML	COMLR	FMWT	FMLP1	FMLP2	FMLP3	FMLP4	FMLP5	FMLP6	FMLP7	FMLP8
	K	KMR	COMRL	UPEM	FMRP1	FMRP2	FMRP3	FMRP4	FMRP5	FMRP6	FMRP7	FMRP8
2	0.5000	1348463.4	0.2556	161.8121	0.8239	0.9861	3.6840	4.3662	3.6875	2.3030	0.0368	0.0252
	1568142.1	1348463.4	0.2556	79736.0	0.0252	0.0368	0.8678	2.3030	3.6875	4.3662	0.9861	0.8239

COLUMN MOMENTS(KIP-FEET), SHEARS(KIPS), REACTIONS(KIPS)

LOAD	COL	PC	MT	TRANSVERSE V	TRANSVERSE MB	TRANSVERSE RF	LONGITUDINAL ML	LONGITUDINAL MR	* MT	LONGITUDINAL V	LONGITUDINAL MB	LONGITUDINAL MF
UNIT F.AT CL.CAP	1	0.315	4.643	0.500	5.857	0.315	0.000	-4.643	1.062	0.500	10.500	10.500
	2	-0.315	4.643	0.500	5.857	-0.315	-4.643	0.000	1.062	0.500	10.500	10.500
EXPANSION OF CAP	1	0.000	90.817	12.042	162.071	0.000	0.000	-90.817	0.000	0.000	0.000	0.000
	2	0.000	-90.817	-12.042	-162.071	0.000	90.817	0.000	0.000	0.000	0.000	0.000
SHRINKAGE OF CAP	1	0.000	-221.998	-29.437	-396.174	0.000	0.000	221.998	0.000	0.000	0.000	0.000
	2	0.000	221.998	29.437	396.175	0.000	-221.998	0.000	0.000	0.000	0.000	0.000
DEAD LOAD TOTAL	1	572.722 607.404	21.084	0.322	-14.329	607.404	1458.554	-1479.639	0.000	0.000	0.000	0.000
	2	670.210 704.893	12.078	-0.322	-18.833	704.893	1771.496	-1783.574	0.000	0.000	0.000	0.000
STREAM FLOW	1	1.738	25.633	2.760	32.337	1.738	0.000	-25.633	10.982	5.168	108.528	108.528
	2	-1.738	25.633	2.760	32.337	-1.738	-25.633	0.000	10.982	5.168	108.528	108.528
TRAC. FORCE 1 LN	1	1.173	7.209	0.776	9.095	1.173	0.000	-7.209	-23.552	-1.557	-52.944	-52.944
	2	-1.173	7.209	0.776	9.095	-1.173	-7.209	0.000	-23.552	-1.557	-52.944	-52.944
T. FORCE 1 LN	1	3.773	23.185	2.497	29.249	3.773	0.000	-23.185	18.829	1.245	42.326	42.326
	2	-3.773	23.185	2.497	29.249	-3.773	-23.185	0.000	18.829	1.245	42.326	42.326
WIND ON SUBSTR.	1	0.551	8.125	0.875	10.250	0.551	0.000	-8.125	-10.859	-5.110	-107.310	-107.310
	2	-0.551	8.125	0.875	10.250	-0.551	-8.125	0.000	-10.859	-5.110	-107.310	-107.310
GROUP 2 WIND 1 1	1	16.698	155.422	16.738	196.070	16.698	0.000	-155.422	51.257	2.799	104.086	104.086
	2	-16.698	155.422	16.738	196.070	-16.698	-155.422	0.000	51.257	2.799	104.086	104.086
GROUP 2 WIND 1 2	1	16.698	155.422	16.738	196.070	16.698	0.000	-155.422	72.975	13.019	318.706	318.706
	2	-16.698	155.422	16.738	196.070	-16.698	-155.422	0.000	72.975	13.019	318.706	318.706
GROUP 2 WIND 2 1	1	15.727	146.559	15.783	184.889	15.727	0.000	-146.559	28.853	-0.054	27.839	27.839
	2	-15.727	146.559	15.783	184.889	-15.727	-146.559	0.000	28.853	-0.054	27.839	27.839
GROUP 2 WIND 2 2	1	13.794	128.934	13.885	162.654	13.794	0.000	-128.934	80.471	13.973	344.218	344.218
	2	-13.794	128.934	13.885	162.654	-13.794	-128.934	0.000	80.471	13.973	344.218	344.218
GROUP 2 WIND 3 1	1	15.724	146.534	15.781	184.857	15.724	0.000	-146.534	10.176	-2.432	-35.724	-35.724
	2	-15.724	146.534	15.781	184.857	-15.724	-146.534	0.000	10.176	-2.432	-35.724	-35.724
GROUP 2 WIND 3 2	1	11.860	111.283	11.984	140.387	11.860	0.000	-111.283	91.695	15.402	382.413	382.413
	2	-11.860	111.283	11.984	140.387	-11.860	-111.283	0.000	91.695	15.402	382.413	382.413
GROUP 2 WIND 4 1	1	13.784	128.842	13.875	162.538	13.784	0.000	-128.842	-9.730	-4.966	-103.467	-103.467
	2	-13.784	128.842	13.875	162.538	-13.784	-128.842	0.000	-9.730	-4.966	-103.467	-103.467
GROUP 2 WIND 4 2	1	8.632	81.841	8.814	103.244	8.632	0.000	-81.841	91.723	15.406	382.509	382.509
	2	-8.632	81.841	8.814	103.244	-8.632	-81.841	0.000	91.723	15.406	382.509	382.509
GROUP 2 WIND 5 1	1	9.100	86.113	9.274	108.634	9.100	0.000	-86.113	-37.082	-8.449	-196.553	-196.553
	2	-9.100	86.113	9.274	108.634	-9.100	-86.113	0.000	-37.082	-8.449	-196.553	-196.553
GROUP 2 WIND 5 2	1	2.982	30.299	3.263	38.223	2.982	0.000	-30.299	79.321	13.827	340.302	340.302
	2	-2.982	30.299	3.263	38.223	-2.982	-30.299	0.000	79.321	13.827	340.302	340.302
GROUP 3 WIND 1 1	1	11.432	86.100	9.272	108.617	11.432	0.000	-86.100	47.434	2.959	103.287	103.287
	2	-11.432	86.100	9.272	108.617	-11.432	-86.100	0.000	47.434	2.959	103.287	103.287
UP 3 WIND 1 2	1	11.432	86.100	9.272	108.617	11.432	0.000	-86.100	53.949	6.025	167.673	167.673
	2	-11.432	86.100	9.272	108.617	-11.432	-86.100	0.000	53.949	6.025	167.673	167.673
GROUP 3 WIND 2 1	1	10.754	81.066	8.730	102.267	10.754	0.000	-81.066	29.150	1.339	54.421	54.421
	2	-10.754	81.066	8.730	102.267	-10.754	-81.066	0.000	29.150	1.339	54.421	54.421

COLUMN MOMENTS(KIP-FEET), SHEARS(KIPS), REACTIONS(KIPS)

LOAD	COL	PC	MT	TRANSVERSE V	TRANSVERSE MB	RP	ML	MR *	LONGITUDINAL MT	LONGITUDINAL V	LONGITUDINAL MB	LONGITUDINAL MF
GROUP 3 WIND 2 2	1	9.406	71.055	7.652	89.638	9.406	0.000	-71.055	60.067	6.567	184.023	184.023
	2	-9.406	71.055	7.652	89.638	-9.406	-71.055	0.000	60.067	6.567	184.023	184.023
GROUP 3 WIND 3 1	1	10.752	81.052	8.729	102.249	10.752	0.000	-81.052	13.908	-0.012	13.685	13.685
	2	-10.752	81.052	8.729	102.249	-10.752	-81.052	0.000	13.908	-0.012	13.685	13.685
GROUP 3 WIND 3 2	1	8.056	61.030	6.572	76.991	8.056	0.000	-61.030	69.226	7.379	208.502	208.502
	2	-8.056	61.030	6.572	76.991	-8.056	-61.030	0.000	69.226	7.379	208.502	208.502
GROUP 3 WIND 4 1	1	9.399	71.003	7.646	89.572	9.399	0.000	-71.003	-2.336	-1.451	-29.730	-29.730
	2	-9.399	71.003	7.646	89.572	-9.399	-71.003	0.000	-2.336	-1.451	-29.730	-29.730
GROUP 3 WIND 4 2	1	5.804	44.307	4.771	55.894	5.804	0.000	-44.307	69.249	7.381	208.563	208.563
	2	-5.804	44.307	4.771	55.894	-5.804	-44.307	0.000	69.249	7.381	208.563	208.563
GROUP 3 WIND 5 1	1	6.131	46.733	5.033	58.956	6.131	0.000	-46.733	-24.658	-3.429	-89.387	-89.387
	2	-6.131	46.733	5.033	58.956	-6.131	-46.733	0.000	-24.658	-3.429	-89.387	-89.387
GROUP 3 WIND 5 2	1	1.861	15.032	1.619	18.963	1.861	0.000	-15.032	59.128	6.484	181.514	181.514
	2	-1.861	15.032	1.619	18.963	-1.861	-15.032	0.000	59.128	6.484	181.514	181.514
LIVE LOAD LL 1	1	-14.958	-123.871	-10.929	-105.639	-14.958	0.000	123.871	0.000	0.000	0.000	0.000
	2	120.957	182.142	10.929	47.368	120.957	358.713	-540.855	0.000	0.000	0.000	0.000
LIVE LOAD LL 2	1	7.591	7.542	-0.838	-25.145	7.591	0.000	-7.542	0.000	0.000	0.000	0.000
	2	204.407	31.013	0.838	-13.410	204.407	509.842	-540.855	0.000	0.000	0.000	0.000
LIVE LOAD LL 3	1	64.171	190.534	12.046	62.425	64.171	0.000	-190.534	0.000	0.000	0.000	0.000
	2	222.026	-146.745	-12.046	-106.214	222.026	633.515	-486.770	0.000	0.000	0.000	0.000
LIVE LOAD LL 4	1	63.439	-126.690	-7.606	-33.046	63.439	357.570	-230.880	0.000	0.000	0.000	0.000
	2	-10.440	86.291	7.606	73.445	-10.440	-86.291	0.000	0.000	0.000	0.000	0.000
LIVE LOAD LL 5	1	164.786	-111.573	-6.353	-21.832	164.786	505.788	-394.216	0.000	0.000	0.000	0.000
	2	-5.788	66.300	6.353	67.105	-5.788	-66.300	0.000	0.000	0.000	0.000	0.000
LIVE LOAD LL 6	1	203.806	87.858	7.443	68.434	203.806	455.210	-543.068	0.000	0.000	0.000	0.000
	2	34.692	-120.532	-7.442	-35.761	34.692	120.532	0.000	0.000	0.000	0.000	0.000
LIVE LOAD LL 7	1	69.852	189.061	13.022	84.411	69.852	0.000	-189.061	0.000	0.000	0.000	0.000
	2	36.146	-175.568	-13.022	-97.903	36.146	175.568	0.000	0.000	0.000	0.000	0.000
LIVE LOAD LL 8	1	98.499	342.050	24.580	174.133	98.499	0.000	-342.050	0.000	0.000	0.000	0.000
	2	113.499	-346.194	-24.580	-169.989	113.499	346.194	0.000	0.000	0.000	0.000	0.000
LIVE LOAD LL 9	1	186.628	262.022	19.495	147.364	186.628	227.648	-489.670	0.000	0.000	0.000	0.000
	2	99.569	-283.826	-19.495	-125.560	99.569	283.826	0.000	0.000	0.000	0.000	0.000
LIVE LOAD LL10	1	110.766	345.437	24.580	170.743	110.766	0.000	-345.437	0.000	0.000	0.000	0.000
	2	101.232	-342.803	-24.580	-173.377	101.232	342.803	0.000	0.000	0.000	0.000	0.000
LIVE LOAD LL11	1	95.980	275.509	18.867	120.707	95.980	0.000	-275.509	0.000	0.000	0.000	0.000
	2	190.217	-252.779	-18.867	-143.437	190.217	496.164	-243.385	0.000	0.000	0.000	0.000
LIVE LOAD LL12	1	48.481	-250.561	-18.535	-138.685	48.481	357.570	-107.009	0.000	0.000	0.000	0.000
	2	110.517	268.433	18.535	120.812	110.517	272.422	-540.855	0.000	0.000	0.000	0.000
LIVE LOAD LL13	1	82.304	-93.764	-7.600	-65.841	82.304	321.813	-228.049	0.000	0.000	0.000	0.000
	2	156.193	119.043	7.600	40.562	156.193	367.727	-486.770	0.000	0.000	0.000	0.000

CAP ANALYSIS AND DESIGN DATA

CAP MOMENTS AND SHEARS

POINT	MOMENTS(KIP-FEET) D.L.TOT.	G1 MAX.+	G1 MAX.-	G2 MAX.+	G2 MAX.-	G3 MAX.+	G3 MAX.- **	SHEARS(KIPS) DL T.LT	DL T.RT	G1 + LT	G1 + RT	G1 - LT	G1 - RT
P 1	-4.118	-4.118	-4.118	-4.118	-4.118	-4.118	-4.118	-4.888	-222.898	-4.888	-222.898	-4.888	-359.050
P 2	-1681.727	-1681.727	-2660.660	-1681.727	-1681.727	-1681.727	-2267.914	-243.753	-243.753	-243.753	-243.753	-379.905	-379.905
C 1L	-1896.121	-1896.121	-2994.187	-1896.121	-1896.121	-1896.121	-2553.646	-246.291		-246.291		-382.443	
C 1R	-1923.531	-1654.607	-3217.234	-1721.481	-2158.903	-1641.197	-2881.457		498.247		849.913		465.772
P 3	-1488.675	-1248.167	-2495.638	-1298.612	-1710.084	-1230.552	-2264.029	495.709	495.709	847.375	847.375	463.234	463.234
P 4	-1396.523	-1162.055	-2342.533	-1209.008	-1614.964	-1143.547	-2133.067	495.169	277.159	846.835	460.593	462.695	244.685
P 5	-162.041	151.413	-579.691	-37.031	-307.669	110.565	-516.216	263.924	263.924	447.358	447.358	231.449	231.449
P 6	1012.046	2133.348	670.798	1074.551	939.232	1723.909	755.664	250.688	2.258	434.122	29.226	218.214	-45.176
P 7	992.154	2085.791	635.103	992.154	992.154	1647.027	778.351	-10.977	-10.977	15.991	15.991	-58.412	-58.412
P 8	911.868	2078.000	510.057	984.682	849.363	1662.193	630.838	-24.213	-272.643	2.755	-245.675	-71.647	-463.001
P 9	-1697.058	-1474.869	-2700.021	-1478.616	-1884.573	-1410.705	-2424.997	-299.114	-569.514	-272.146	-542.546	-489.473	-920.501
	-1803.038	-1575.833	-2871.285	-1581.628	-1993.101	-1512.457	-2571.800	-570.053	-570.053	-543.086	-543.086	-921.040	-921.040
C	-2302.945	-2052.144	-3678.305	-2067.573	-2504.994	-1992.476	-3263.749	-572.591		-545.624		-923.578	
C 2R	-2318.646	-2318.646	-3492.843	-2318.646	-2318.646	-2318.646	-3021.758		298.681		444.273		298.681
P11	-2058.411	-2058.411	-3105.214	-2058.411	-2058.411	-2058.411	-2685.240	296.143	296.143	441.735	441.735	296.143	296.143
P12	-4.118	-4.118	-4.118	-4.118	-4.118	-4.118	-4.118	275.288	4.888	420.879	4.888	275.288	4.888

CAP DESIGN DATA

PT.	M+ UNF. K-FT.	M- UNF. K-FT.	TOP REINFORCE. AS	NO.SIZE	BOT.REINFORCE. AS	NO.SIZE	LEFT STIRRUPS M.SP.	AV/IN	BAR&SPAC	RIGHT STIRRUPS M.SP.	AV/IN	BAR&SPAC	D IN.	FC PSI	PS %	FS/FF RATIO	FS/FZ RATIO
P 1	-3.168	-3.168	1.76	4 # 11	1.76	4 # 11	0.00	0.000	#5@ 0.00	23.48	0.067	#5@ 9.24	51.00		0.09	0.000	0.006
.	-1293.636	-1744.550	13.09	9 # 11	1.76	4 # 11	24.00	0.072	#5@ 8.57	24.00	0.072	#5@ 8.57	51.00		0.72	0.592	0.881
C 1	-1355.768	-2110.940	16.32	11 # 11	1.76	4 # 11	23.64	0.076	#5@ 8.18	11.82	0.270D	#5@ 4.60	51.00		0.90	0.778	0.967
P 3	-1034.352	-1642.258	12.24	8 # 11	1.76	4 # 11	12.00	0.263D	#5@ 4.71	12.00	0.263D	#5@ 4.71	51.00		0.67	0.843	0.966
P 4	-966.248	-1542.850	11.45	8 # 11	1.76	4 # 11	12.00	0.263D	#5@ 4.71	24.00	0.105	#5@ 5.89	51.00		0.63	0.775	0.908
P 5	19.735	-334.897	3.90	4 # 11	1.76	4 # 11	23.48	0.104	#5@ 5.96	23.48	0.104	#5@ 5.96	51.00		0.35	0.633	0.000
P 6	1294.988	612.376	1.76	4 # 11	10.38	7 # 11	24.00	0.095	#5@ 6.56	0.00	0.000	#5@ 0.00	51.00		0.57	0.931	0.905
P 7	1266.944	598.732	1.76	4 # 11	10.14	7 # 11	0.00	0.000	#5@ 0.00	0.00	0.000	#5@ 0.00	51.00		0.56	0.905	0.886
P 8	1247.514	516.356	1.76	4 # 11	10.10	7 # 11	0.00	0.000	#5@ 0.00	24.00	0.106	#5@ 5.83	51.00		0.55	0.955	0.872
P 9	-1178.446	-1767.411	13.30	9 # 11	1.76	4 # 11	24.00	0.117	#5@ 5.29	12.00	0.293D	#5@ 4.23	51.00		0.73	0.736	0.893
P10	-1257.984	-1879.005	14.20	10 # 11	1.76	4 # 11	12.00	0.293D	#5@ 4.23	12.00	0.293D	#5@ 4.23	51.00		0.78	0.690	0.829
C 2	-1633.193	-2405.011	18.96	13 # 11	1.76	4 # 11	11.79	0.301D	#5@ 4.12	23.58	0.102	#5@ 6.09	51.00		1.05	0.689	0.907
P11	-1583.393	-2065.569	15.71	11 # 11	1.76	4 # 11	23.64	0.100	#5@ 6.18	23.64	0.100	#5@ 6.18	51.00		0.87	0.539	0.946
P12	-3.168	-3.168	1.76	4 # 11	1.76	4 # 11	23.48	0.093	#5@ 6.67	0.00	0.000	#5@ 0.00	51.00		0.09	0.000	0.006

COLUMN ANALYSIS AND DESIGN OUTPUT
CRITICAL COLUMN LOADS

CN	T B	GR	LLC	WC	R	E S	C F	S F	PF	MTF	MLF	PM	MTM	MLM	PU	MTU	MLU	PU/PM	B	D
1	T	1	LL10	0.0			C	S	997.1	871.0	63.2	997.1	871.0	408.1	2064.4	1803.4	845.1	2.071	42.00	42.00
1	B	3	LL 6	3.2			C	S	1076.4	283.2	746.5	1076.4	376.8	878.1	2211.2	774.1	1804.1	2.054	42.00	42.00
2	T	1	LL 3	0.0			C	S	1337.8	-188.2	80.4	1337.8	468.2	580.5	2872.4	1007.9	1249.6	2.148	42.00	42.00
	B	3	LL 3	4.2			C	S	1186.1	22.9	746.6	1186.1	415.1	894.6	2309.0	808.3	1741.9	1.947	42.00	42.00

COLUMN DESIGN DATA

CN	T B	B FACE 1 NO.SIZE	B FACE 2 NO.SIZE	D FACE 3 NO.SIZE	D FACE 4 NO.SIZE	AS	PS	BD12	BD	SUMPU	SUMPC	DEL.T	DEL.L	CM	R	PHIC
1	T	4 # 11	4 # 11	2 # 11	2 # 11	18.72	1.061	1.00	0.016	2121.	56995.	1.000	1.169	0.400	2	0.70
1	B	4 # 11	4 # 11	2 # 11	2 # 11	18.72	1.061	1.00	0.044	1971.	50957.	1.000	1.176	0.400	2	0.70
2	T	4 # 11	4 # 11	2 # 11	2 # 11	18.72	1.061	1.00	0.111	2282.	55032.	1.000	1.240	0.400	2	0.70
2	B	4 # 11	4 # 11	2 # 11	2 # 11	18.72	1.061	1.00	0.000	2033.	57744.	1.000	1.198	0.926	2	0.70

FOOTING 1 DESIGN LOADS

F	G	LLID	WC	ES	C	S	P	MT	VT	ML	VL	P4	P3	P2	P1	MTF	VBF	VPF	LOAD
.		LL 9	0.0		C	S	771.058	216.788	25.673	222.809	8.529	104.709	76.636	127.743	155.816	37.398	-0.191	15.474	MAX.P1
1	1	LL 9	0.0		C	S	1134.532	386.177	47.180	289.652	11.088	142.279	105.783	197.668	234.164	57.396	-0.249	22.798	MAX.MT
1	1	LL 9	0.0		C	S	1134.532	386.177	47.180	289.652	11.088	142.279	105.783	197.668	234.164	57.396	-0.249	22.798	MAX.VT
1	1	LL 6	0.0		C	S	1164.853	246.863	25.907	289.652	11.088	164.425	127.929	184.185	220.681	53.651	-0.249	23.413	MAX.VP
1	3	LL 6	3.2		C	S	1026.887	266.568	26.456	746.538	26.146	171.224	78.107	137.968	231.084	81.233	-0.249	20.614	MAX.ML
1	1	LL 9	0.0		C	S	1134.532	386.177	47.180	289.652	11.088	142.279	105.783	197.668	234.164	75.845	-0.249	22.798	MAX.VL
1	3	LL11	1.2		C	S	705.625	279.178	32.339	533.431	18.759	107.464	40.899	106.293	172.858	36.786	-0.191	14.147	MAX.P3

FOOTING 1 ANALYSIS/DESIGN RESULTS

FOOTING SIZE			*	BAR REINFORCEMENT STEEL			*	SECTION CAPACITIES				
B	D	T	P1/PA	AS	NO.SIZE	SPAC.	PLACEMENT	MT.	VB	VP	DS	FC
9.000	9.000	3.500	0.812	0.61	18 # 5	@ 6.000	TOP TRAN	76.841	33.868	67.736	28.062	0.000
				0.64	19 # 5	@ 5.625	BOT.LONG	82.865	34.622	69.245	28.688	0.000

NUMBER OF PILES = 7 BP = 3.000 DP = 3.000

FOOTING 2 DESIGN LOADS

F	G	LLID	WC	ES	C	S	P	MT	VT	ML	VL	P4	P3	P2	P1	MTF	VBF	VPF	LOAD
2	4	LL13	0.0	S	C	S	819.955	521.628	44.796	222.809	8.529	80.714	52.640	165.709	193.783	47.944	-0.191	16.466	MAX.P1
2	4	LL13	0.0	S	C	S	1065.942	678.117	58.235	289.652	11.088	104.928	68.432	215.422	251.918	62.328	-0.249	21.406	MAX.MT
2	1	LL 3	0.0		C	S	1292.745	-67.253	-9.327	289.652	11.088	202.498	166.003	182.652	219.148	53.225	-0.249	26.008	MAX.VT
2	1	LL 3	0.0		C	S	1292.745	-67.253	-9.327	289.652	11.088	202.498	166.003	182.652	219.148	53.225	-0.249	26.008	MAX.VP
		LL 3	4.2		C	S	1132.094	48.700	2.681	746.619	26.149	211.348	118.222	127.902	221.029	87.498	-0.249	22.749	MAX.ML
2	1	LL 3	0.0		C	S	1292.745	-67.253	-9.327	289.652	11.088	202.498	166.003	182.652	219.148	85.262	-0.249	26.008	MAX.VL
2	4	LL13	0.0	S	C	S	819.955	521.628	44.796	222.809	8.529	80.714	52.640	165.709	193.783	47.944	-0.191	16.466	MAX.P3

FOOTING 2 ANALYSIS/DESIGN RESULTS

FOOTING SIZE			*	BAR REINFORCEMENT STEEL			*	SECTION CAPACITIES				
B	D	T	P1/PA	AS	NO.SIZE	SPAC.	PLACEMENT	MT.	VB	VP	DS	FC
9.000	9.000	3.500	0.807	0.64	19 # 5	@ 5.625	TOP TRAN	81.024	33.868	67.736	28.062	0.000
				0.69	21 # 5	@ 5.125	BOT.LONG	91.399	34.622	69.245	28.688	0.000

NUMBER OF PILES = 7 BP = 3.000 DP = 3.000

CALCULATION COVER SHEET

PROJECT	JOB NO.	CALC NO.	SHEET
I-75 / I-575 NORTHWEST CORRIDOR	NH000-0073-03(242)	BR#31	1
SUBJECT	DISCIPLINE		
References for Design	STRUCTURAL		

CALCULATION STATUS DESIGNATION	PRELIMINARY	CONFIRMED	SUPSEDED	VOIDED	INCOMPLETE
	☐	☐	☐	☐	X

COMPUTER PROGRAM/TYPE	SCP	MAINFRAME	PC	PROGRAM	VERSION/RELEASE NO.
	◯ YES ◯ NO	◯	◯	NONE	

Note 1: Georgia Department of Transportation (GDOT) terminated Contract Number TOURDPPI60072 for its convenience the completion of all work under that contract and directed that the work with respect to these calculations be discontinued.
(a) These calculations were not completed at the time of GDOT's direction and the information contained herein is not and/or has not been fully verified or checked. These calculations are a work-in-progress and are presented only as such.
(b) Any user is cautioned that the use of these calculations and any related information or calculations, without access to factors and without proper regard for their purpose, could lead to erroneous conclusions.
(c) If any such calculations or any information contained herein is used in future work efforts or any follow on design work a complete confirmation of the information contained herein should be performed prior to any such use.
(d) GTP has no responsibility for the use of this information not under its direct control.

Included Reference Information:

- Roadway information
- Creek Survey Shots
- Bridge Survey Shots
- Existing Bridge Plans
- Existing Bridge Maintenance Reports
- Hydraulic Information

NO.	REASON FOR REVISION	TOTAL NO. OF SHEETS	LAST SHEET NO.	BY	CHECKED	APPROVED/ ACCEPTED	DATE
A	As per GDOT's termination for convenience direction	53	53	JCR			11/30/09

RECORD OF REVISIONS

CALCULATION SHEET

PROJECT: I-75 / I-575 NORTHWEST CORRIDOR
JOB NUMBER NH000-0073-03(242)
CALC NO. BR#31

SUBJECT: Roadway Information
BY: JCR DATE: 11/30/2009

SHEET NO.
SHEET REV.

Horizontal Alignment Review Report

Report Created: 9/18/2009
Time: 5:40pm

Project: I-75/I-575
Description: I-75/I-575 PPI
File Name: N:\TRA\255717\Drawings\Civil\Rdy\InRoads\I-75 I-575.alg
Last Revised: san49773 9/18/2009 5:39:37 PM
Input Grid Factor: 1.00000000 **Note:** All units in this report are in feet unless specified otherwise.

Alignment Name: I-75 NB CL
Alignment Description: I-75 NB CL corrected for topo
Alignment Style: MAIN_P_CONSTCL

		Station	Northing	Easting
Element: Linear				
POB	( )	800+00.0591	1459076.3730	2175089.1100
PI	( )	807+46.4608	1459808.7490	2174945.0930
Tangential Direction:		N 11°07'29.6349" W		
Tangential Length:		746.4017		
Element: Linear				
PI	( )	807+46.4608	1459808.7490	2174945.0930
PI	( )	833+19.8800	1462334.3070	2174451.0860
Tangential Direction:		N 11°04'02.9823" W		
Tangential Length:		2573.4192		
Element: Linear				
PI	( )	833+19.8800	1462334.3070	2174451.0860
PI	( )	837+55.3219	1462761.1592	2174365.0229
Tangential Direction:		N 11°23'57.4843" W		
Tangential Length:		435.4419		
Element: Linear				
PI	( )	837+55.3219	1462761.1592	2174365.0229
PC	( )	837+82.0505	1462787.3799	2174359.8368
Tangential Direction:		N 11°11'16.8430" W		
Tangential Length:		26.7286		
Element: Circular				
PC	( )	✓ 837+82.0505	✓ 1462787.3799	✓ 2174359.8368
PI	( )	844+76.9091	✓ 1463469.0332	✓ 2174225.0140
CC	( )		1462034.5470	2170553.5732
PT	( )	✓ 851+57.1900	✓ 1464061.5315	✓ 2173862.0069
Radius:		✓ 3880.0000		
Delta:		20°18'23.8359" Left		
Degree of Curvature (Arc):		1°28'36.1033"		
Length:		1375.1395		
Tangent:		694.8586		

BR#31

PROJECT:	NW Corridor
COUNTY:	COBB
BRIDGE:	31
DESCRIPTION:	I-75 over Noonday Creek NB

VERTICAL GRADE DATA FOR NEW ALIGNMENT, ADJUSTED FOR SURVEY DIFF.:

PVC =	832+93.13	PVI =	841+93.13	PVT =	850+93.13
PVI EL. =	970.6328	PVI EL. =	946.07	PVI EL. =	965.9690
		VC Length (ft) =	1800		

ELEVATION COMPARISON, ADJUSTED FOR SURVEY DIFF.

BENT 1R LEFT SIDE		BENT 1R RIGHT SIDE	
Geomath Rdy EL. =	958.835	Geomath Rdy EL. =	961.209
Survey EL. =	958.871	Survey EL. =	961.269
DIFFERENCE =	-0.036	DIFFERENCE =	-0.060

BENT 2R LEFT SIDE		BENT 2R RIGHT SIDE	
Geomath Rdy EL. =	958.138	Geomath Rdy EL. =	960.562
Survey EL. =	958.064	Survey EL. =	956.363
DIFFERENCE =	0.074	DIFFERENCE =	4.199

BENT 3R LEFT SIDE		BENT 3R RIGHT SIDE	
Geomath Rdy EL. =	957.622	Geomath Rdy EL. =	960.057
Survey EL. =	957.563	Survey EL. =	955.836
DIFFERENCE =	0.059	DIFFERENCE =	4.221

BENT 4R LEFT SIDE		BENT 4R RIGHT SIDE	
Geomath Rdy EL. =	957.291	Geomath Rdy EL. =	959.680
Survey EL. =	957.290	Survey EL. =	959.705
DIFFERENCE =	0.001	DIFFERENCE =	-0.025

Mean EL. Difference =	0.002

Horizontal Alignment Review Report

Report Created: 9/18/2009
Time: 5:37pm

Project: I-75/I-575
Description: I-75/I-575 PPI
File Name: N:\TRA\255717\Drawings\Civil\Rdy\InRoads\I-75 I-575.alg
Last Revised: san49773 9/18/2009 5:36:07 PM
Input Grid Factor: 1.00000000 **Note:** All units in this report are in feet unless specified otherwise.

Alignment Name: I-75 Ramp A
Alignment Description: Big Shanty Road
Alignment Style: MAIN_P_SIDECL

		Station	Northing	Easting
Element: Linear				
POB	( )	29+01.8158	1461922.1084	2174505.2206
PC	( )	37+78.2808	1462778.7364	2174319.8036
Tangential Direction:		N 12°12'47.7283" W		
Tangential Length:		876.4651		
Element: Circular				
PC	( )	37+78.2808	1462778.7364	2174319.8036
PI	( )	42+12.1146	1463202.3255	2174226.0804
CC	( )		1461951.6368	2170581.6659
PCC	( )	46+42.2631	1463594.2030	2174039.9521
Radius:		3828.5463		
Delta:		12°55'47.4647" Left		
Degree of Curvature (Arc):		1°29'47.5489"		
Length:		863.9822		
Tangent:		433.8338		
Chord:		862.1501		
Middle Ordinate:		24.3458		
External:		24.5017		
Tangent Direction:		N 12°28'34.4937" W		
Radial Direction:		N 77°31'25.5062" E		
Chord Direction:		N 18°56'28.2261" W		
Radial Direction:		N 64°35'38.0417" E		
Tangent Direction:		N 25°24'21.9584" W		
Element: Circular				
PCC	( )	46+42.2631	1463574.1814	2174049.3908
PI	( )	49+00.4856	1463810.3802	2173945.0405
CC	( )		1462030.6828	2170555.6547
PT	( )	51+57.9235	1464030.3844	2173809.8479
Radius:		3819.5000		
Delta:		7°44'07.2566" Left		
Degree of Curvature (Arc):		1°30'00.3090"		
Length:		515.6604		

BR #31

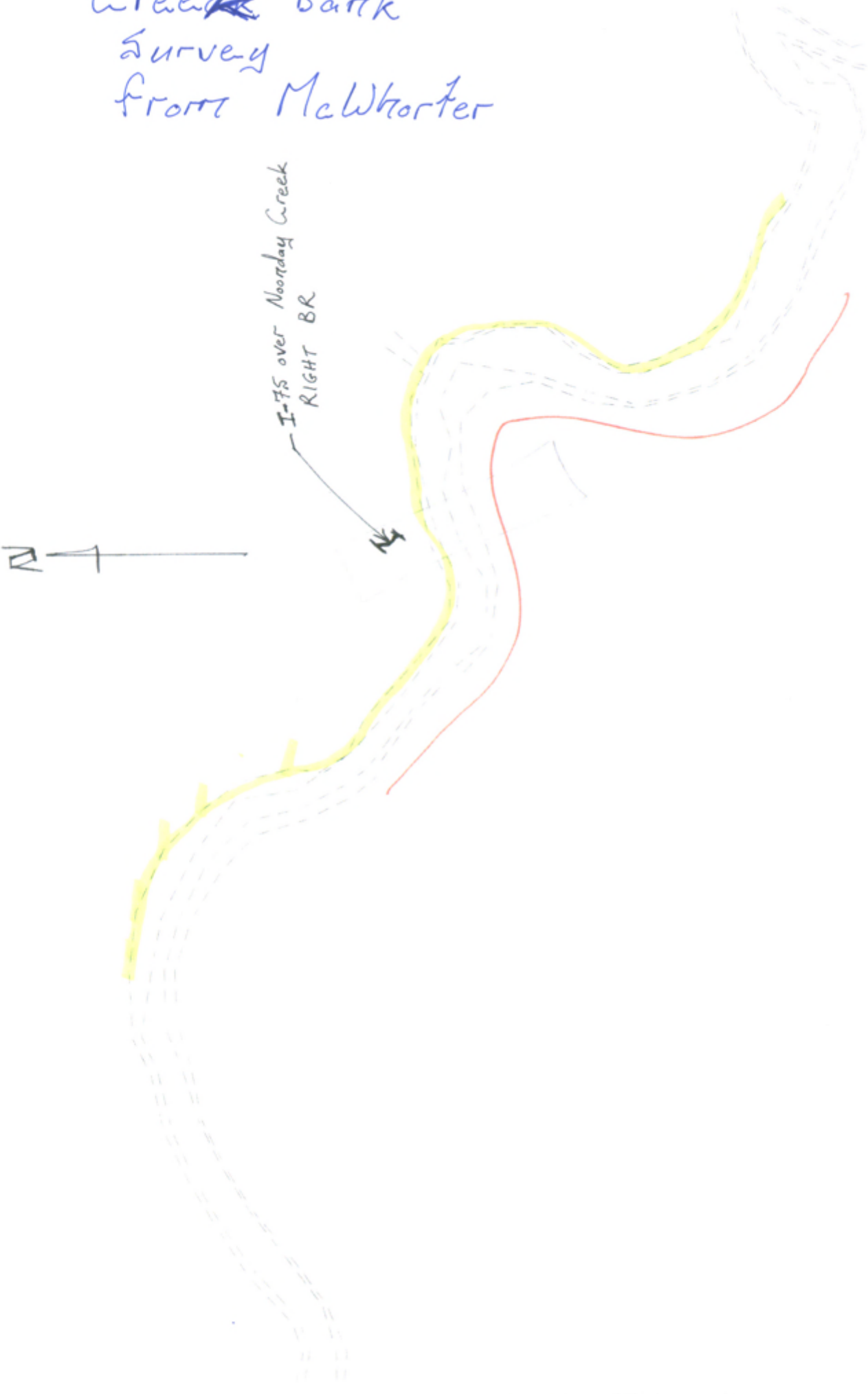
CALCULATION SHEET

PROJECT: I-75 / I-575 NORTHWEST CORRIDOR
JOB NUMBER NH000-0073-03(242)
CALC NO. BR#31

SUBJECT: Creek Survey Shots
BY: JCR DATE: 11/30/2009

SHEET NO.
SHEET REV.

Creek Bank
Survey
from McWhorter



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"BCB315"
SVXA32637 N 1463211.296400 E 2173405.111500 Z 930.374 DSB
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  "TCB327"
>>>> End of Describe Points <<<<
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CALCULATION SHEET

PROJECT: I-75 / I-575 NORTHWEST CORRIDOR
JOB NUMBER NH000-0073-03(242)
CALC NO. BR#31

SUBJECT: Bridge Survey Shots
BY: JCR DATE: 11/30/2009

SHEET NO.
SHEET REV.

I-75 over Noonday Ck (Existing Right Bridge)
Survey Shots at Bents

BENT 1 LEFT SIDE
SVXA45814 N 1462935.848600 E 2174315.108700 Z 958.828 TBAS
"ZAS708"
SVXB51112 N 1462935.861700 E 2174315.204100 Z 958.871 TBRDG
BENT 1 RIGHT SIDE
SVXA45825 N 1462949.622400 E 2174372.751400 Z 961.067 TBAS
"ZAS708"
SVXB51122 N 1462949.738500 E 2174372.926800 Z 961.269 TBRDG

BENT 2 LEFT SIDE
SVXA45822 N 1463014.083600 E 2174294.793800 Z 954.472 TBRDG
"ZULST715"
SVXA45811 N 1463013.678600 E 2174295.434300 Z 958.064 TBRDG
"ZEJ707"
BENT 2 RIGHT SIDE
SVXA45899 N 1463027.823400 E 2174354.142900 Z 956.363 TCOLE
"ZUPIER731"
SVXA45898 N 1463027.834800 E 2174354.278300 Z 953.102 TCOLE
"ZUPIER731"

BENT 3 LEFT SIDE
SVXA45809 N 1463091.105900 E 2174274.095300 Z 957.563 TBRDG
"ZEJ706"
SVXA45823 N 1463091.098100 E 2174273.805600 Z 953.933 TBRDG
"ZULST715"
BENT 3 RIGHT SIDE
SVXA45869 N 1463106.374800 E 2174332.901400 Z 952.527 TCOLE
"ZUPIER723"
SVXA45870 N 1463106.346800 E 2174332.871300 Z 955.836 TCOLE
"ZUPIER723"

BENT 4 LEFT SIDE
SVXA45808 N 1463168.339900 E 2174251.405600 Z 957.294 TBAS
"ZAS705"
SVXB51165 N 1463168.645000 E 2174251.223400 Z 957.290 TBRDG
BENT 4 RIGHT SIDE
SVXA45834 N 1463185.737600 E 2174308.128700 Z 959.890 TBAS
"ZAS705"
SVXB51186 N 1463186.109500 E 2174308.328100 Z 959.705 TBRDG

CALCULATION SHEET

PROJECT: I-75 / I-575 NORTHWEST CORRIDOR
JOB NUMBER NH000-0073-03(242)
CALC NO. BR#31

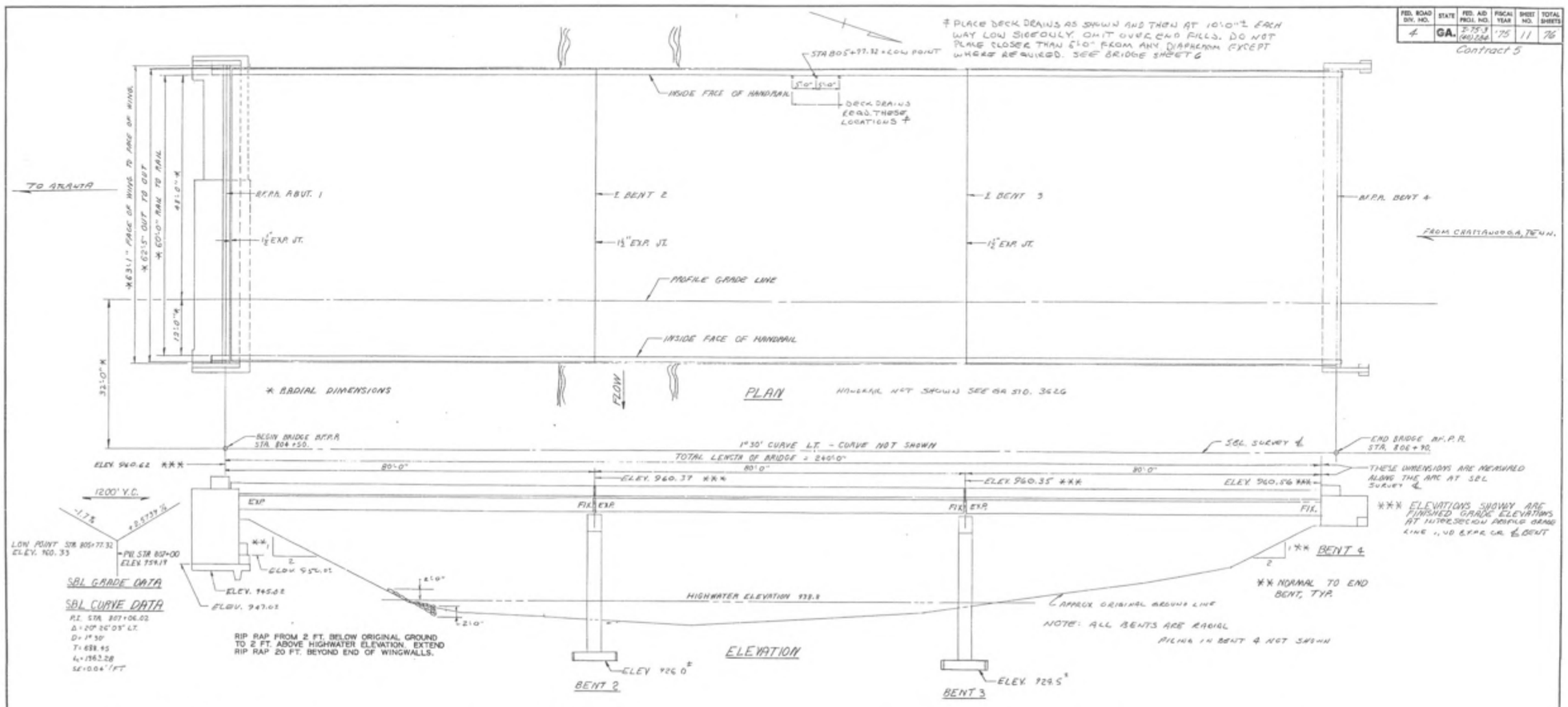
SUBJECT: Existing Bridge Plans
BY: JCR DATE: 11/30/2009

SHEET NO.
SHEET REV.

FED. ROAD DIV. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
4	GA.	I-75-3 (40) 286	75	11	76

Contract 5

PLACE DECK DRAINS AS SHOWN AND THEN AT 10'-0" ± EACH WAY LOW SIDE ONLY. OMIT OVER END FILLS. DO NOT PLACE CLOSER THAN 5'-0" FROM ANY DIAPHRAGM EXCEPT WHERE REQUIRED. SEE BRIDGE SHEET 6



RIP RAP FROM 2 FT. BELOW ORIGINAL GROUND TO 2 FT. ABOVE HIGHWATER ELEVATION. EXTEND RIP RAP 20 FT. BEYOND END OF WINGWALLS.

SBL GRADE DATA

SBL CURVE DATA

P.I. STA. 807+06.02
Δ = 20° 26' 05" LT.
D = 1° 30'
T = 638.45
L = 1362.28
SE = 0.04'/FT.

SBL BRIDGE CONSISTS OF

3 - COMPOSITE ROLLED BEAM SIMPLE SPANS	SPECIAL DESIGN
1 - CONCRETE ABUTMENT	SPECIAL DESIGN
1 - STEEL H PILE END BENT	SPECIAL DESIGN
2 - CONCRETE INTERMEDIATE BENTS	SPECIAL DESIGN
ALUMINUM HANDRAILING	GA. STD. NO.3626(8-29-74)
BAR BENDING DETAILS	GA. STD. NO.3901
TYPICAL FILL DETAIL AT END OF BRIDGE	GA. STD. NO.9037(9-1-70)
END POST AND END POST GUARDRAIL ATTACHMENT DETAIL L = 4'-0", W = 1'-1", H = 3'-2"	GA. STD. NO.9053

DRAINAGE DATA

DRAINAGE AREA = 10.6 SQ. MI.
Q_{50} = 2300 CFS
AREA OF OPENING UNDER HIGH WATER = 975 SQ. FT.

GENERAL NOTES

SPECIFICATIONS - GEORGIA STANDARD DATED 1972.

END BENT EXCAVATION - EXCAVATION FOR END BENT NO. 1 LT. SHALL BE PAID FOR AS CU YD BR EXCAV, STREAM CROSS.

CHAMFER - ALL EXPOSED EDGES SHALL BE CHAMFERED 3/4 INCH UNLESS OTHERWISE NOTED.

PROTECTIVE SURFACE TREATMENT - PER SECTION 500.13C WILL BE REQUIRED AT THIS SITE.

REINFORCEMENT - ALL REINFORCEMENT SHALL BE PLACED AND TIED IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS. WELDING OF REINFORCEMENT WILL NOT BE PERMITTED, EXCEPT AS SHOWN ON THE PLANS.

DRIVING DATA PILES - ONE REQUIRED AT EACH OF BENT 4 LT. AND BENT 1 RT.

PILE DRIVING OBJECTIVE - SEE SUBSTRUCTURE DETAILS.

UTILITIES

NONE

SUMMARY OF QUANTITIES

LT.	RT.	
510	299	CU YD BR EXCAV, STREAM CROSS
77	154	CU YD BR BKFILL
LUMP	——	SUPERSTR CONC (CL AA) - BR NO 1 LT
——	LUMP	SUPERSTR CONC (CL AA) - BR NO 1 RT
271	198	CU YD CL A CONC
LUMP	——	STR STEEL - BR NO 1 LT
——	LUMP	STR STEEL - BR NO 1 RT
51,141	41,152	LB BAR REINF STEEL
LUMP	——	SUPERSTR REINF STEEL - BR NO 1 RT
——	LUMP	SUPERSTR REINF STEEL - BR NO 1 RT
467	474	LIN FT ALUM HANDRAIL, STD 3626
245	504	LIN FT PILING IN PLACE, STEEL H, 12 BP 53
1	1	EACH LOAD TEST, STEEL H, 12 BP 53 (IF REQD)
359	458	SQ YD STN PLAIN RIP RAP

DESIGN DATA

SPECIFICATIONS - A.A.S.H.O., 1969, INT. '970, 1971
TYPICAL HS20-44 AN./OR MILITARY LOADING - IMPACT ALLOWED
FUTURE PAVING ALLOWANCE = 15 LBS. PER SQ. FT.

BRIDGE NO. 1 LT

GEORGIA
DEPARTMENT OF TRANSPORTATION
HIGHWAY DIVISION - BRIDGE DESIGN

PLAN AND ELEVATION
SBL I-75 OVER NOONDAY CREEK
COBB CO. I-75-3 (40) 286 LT 1
SCALE: 1"=10'-0" MAR. 1973

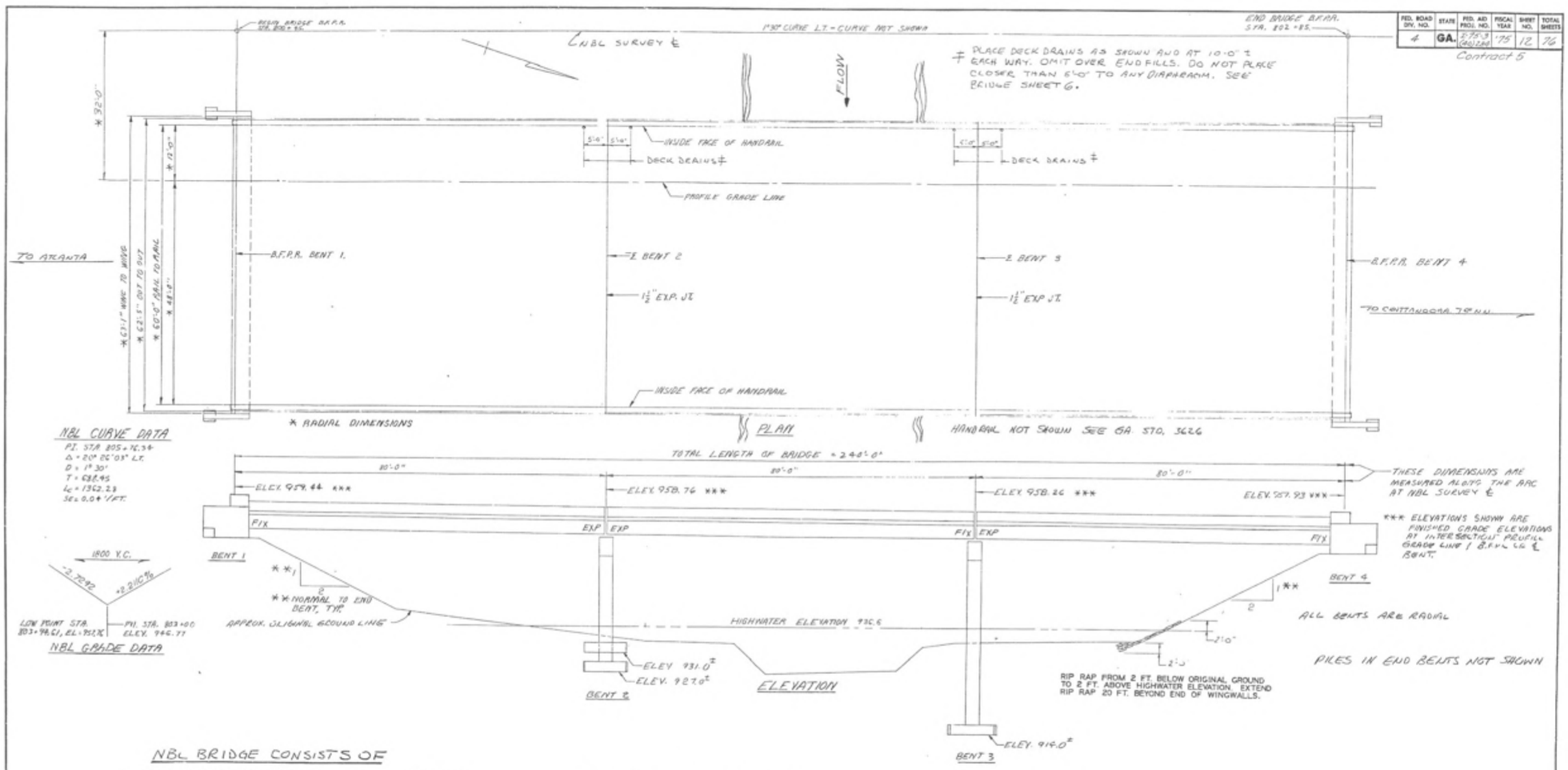
BRIDGE SHEET 1 OF 24

DATE	BY	REVISIONS

DESIGNED HJL | TRACED | REVIEWED LAP
DRAWN HHM | CHECKED CBE | APPROVED

FED. ROAD DIV. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
4	GA.	I-75-3 (201)	'75	12	76

Contract 5



NBL BRIDGE CONSISTS OF

3 - COMPOSITE ROLLED BEAM SIMPLE SPANS	SPECIAL DESIGN
2 - STEEL H PILE END BENTS	SPECIAL DESIGN
2 - CONCRETE INTERMEDIATE BENTS	SPECIAL DESIGN
ALUMINUM HANDRAIL	GA. STD. NO. 3626 (8-29-74)
BAR BENDING DETAILS	GA. STD. NO. 3901
TYPICAL FILL DETAIL AT END OF BRIDGE	GA. STD. NO. 9037 (9-1-70)
END POST AND END POST GUARDRAIL ATTACHMENT DETAIL L = 4'-0"; W = 1'-1"; H = 3'-2"	GA. STD. NO. 9055

NOTE: FOR GENERAL NOTES, SUMMARY OF QUANTITIES, DESIGN DATA AND OTHER NOTES, SEE PLAN AND ELEVATION SHEET, BRIDGE NO. 1 LT.

BRIDGE NO. 1 RT.

GEORGIA
DEPARTMENT OF TRANSPORTATION
HIGHWAY DIVISION - BRIDGE DESIGN

PLAN AND ELEVATION
NBL I-75 OVER NOONDAY CREEK
COBB CO. I-M-3(14)59 CT. 5
SCALE: 1" = 10'-0" MAR. 1973

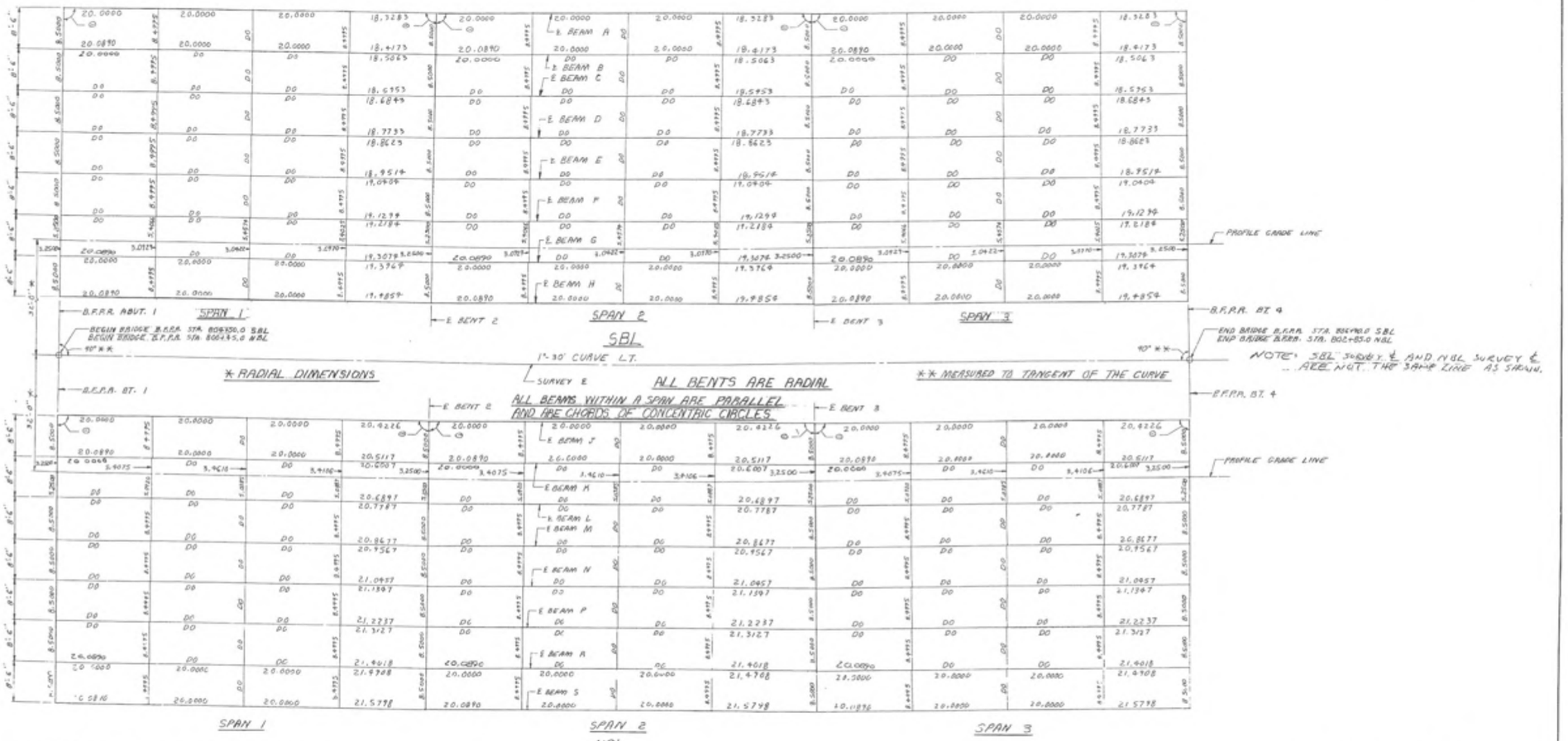
BRIDGE SHEET 2 OF 24

DATE	BY	REVISIONS

DESIGNED HDL | TRACED | REVIEWED LRP
DRAWN RHM | CHECKED CDE | APPROVED

FED. ROAD DIV. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
4	GA.	I-75-3 (94)224	'75	13	76

Contract 5



* RADIAL DIMENSIONS

** MEASURED TO TANGENT OF THE CURVE

ALL BENTS ARE RADIAL

ALL BEAMS WITHIN A SPAN ARE PARALLEL AND ARE CHORDS OF CONCENTRIC CIRCLES

NOTE: SBL SURVEY ℄ AND NBL SURVEY ℄ ARE NOT THE SAME LINE AS SHOWN.

NOTE: ⊙ = 89°-24'-00" MEASURED BETWEEN ℄ BEAM AND B.F.P.R. OR ℄ BENT, AT ALL BEAMS. L.T. AND RIGHT BRIDGE.

BRIDGE NO. 1 L.T. & RT.

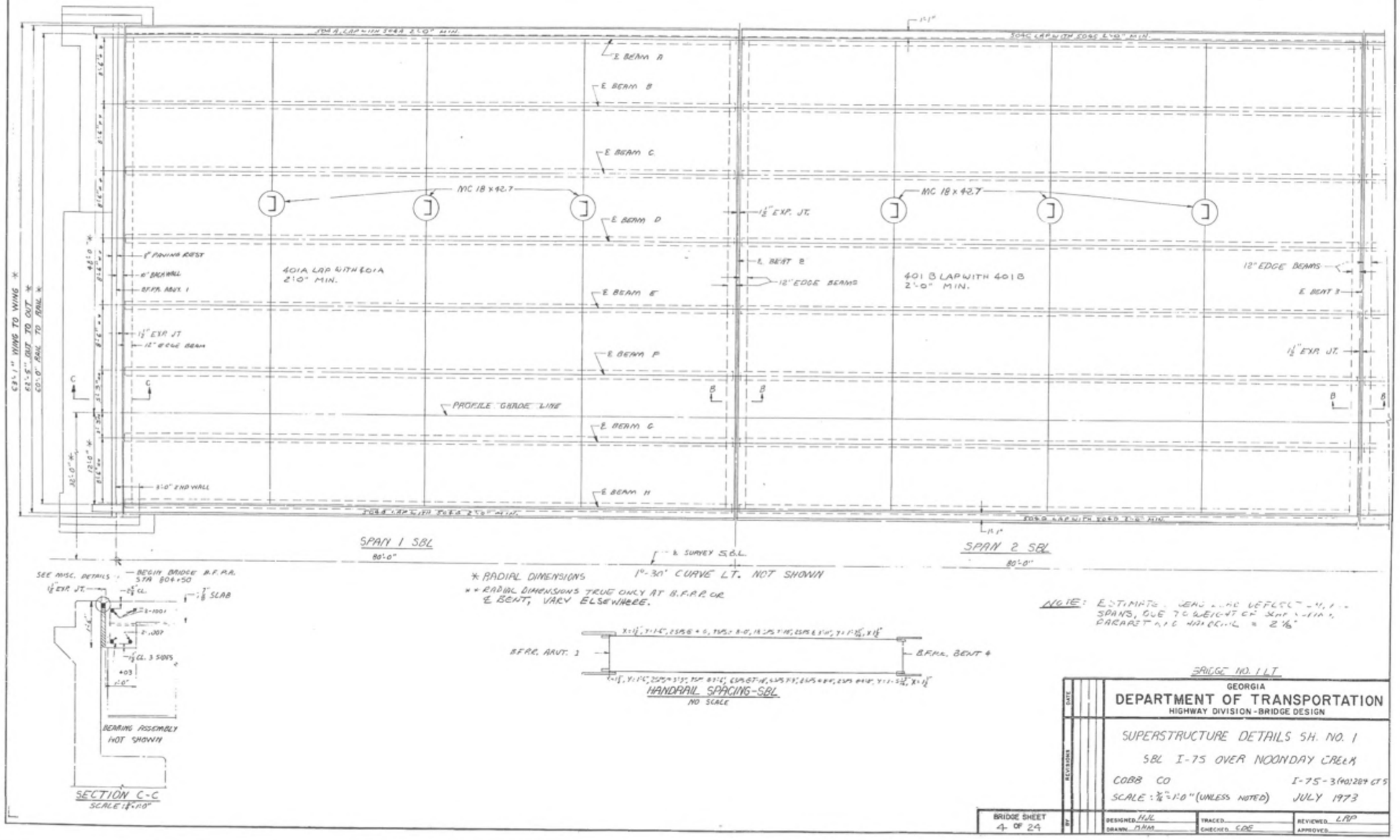
GEORGIA
DEPARTMENT OF TRANSPORTATION
HIGHWAY DIVISION - BRIDGE DESIGN

BEAM CHORD LAYOUT
I-75 OVER NOONDAY CREEK
COBB CO. I-75-3(94)224 CT. 5
SCALE: 1"=10'-0" AUG. 1974

BRIDGE SHEET	DESIGNED LJL	TRACED	REVIEWED EAP
3 OF 24	DRAWN JKMM	CHECKED JPT	APPROVED

FED. ROAD DIV. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
4	GA.	I-75-3 (40)284	'75	14	76

Contract 5



* RADIAL DIMENSIONS

** RADIAL DIMENSIONS TRUE ONLY AT B.F.P.R. OR ℄ BENT, VARY ELSEWHERE.

SECTION C-C
SCALE: 1½"=1'-0"

NOTE: ESTIMATED DEAD LOAD DEFLECTION FOR 80'-0" SPANS, DUE TO WEIGHT OF SLAB, PARAPET, & HANDRAIL = 2 1/8"

BRIDGE NO. 1 LT

GEORGIA
DEPARTMENT OF TRANSPORTATION
HIGHWAY DIVISION - BRIDGE DESIGN

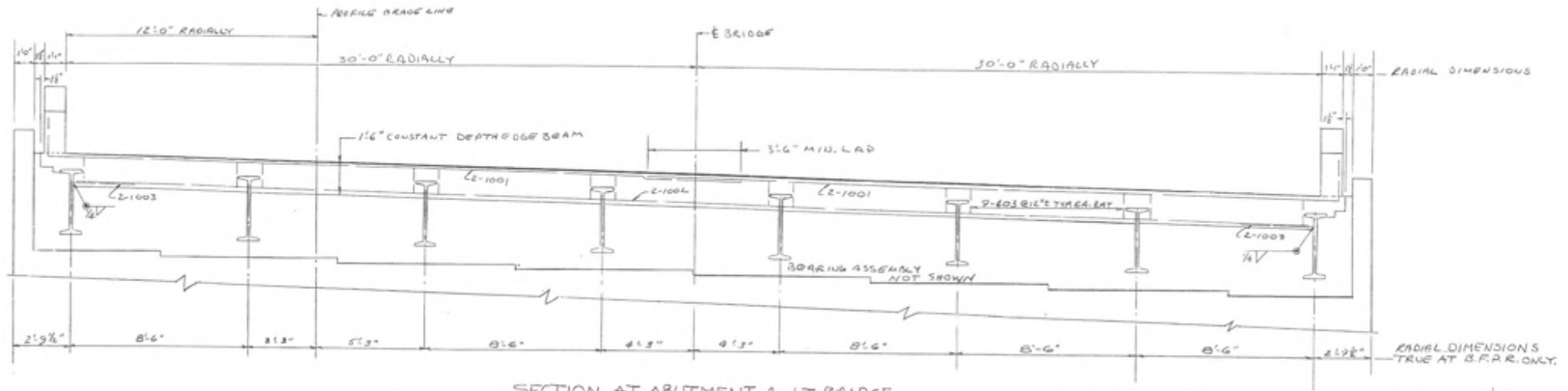
SUPERSTRUCTURE DETAILS SH. NO. 1
SBL I-75 OVER NOONDAY CREEK
COBB CO — I-75-3(40)284 CTS
SCALE: 1/8"=1'-0" (UNLESS NOTED) — JULY 1973

DESIGNED H.J.L. | TRACED | REVIEWED L.R.P.
DRAWN P.H.M. | CHECKED G.D.E. | APPROVED

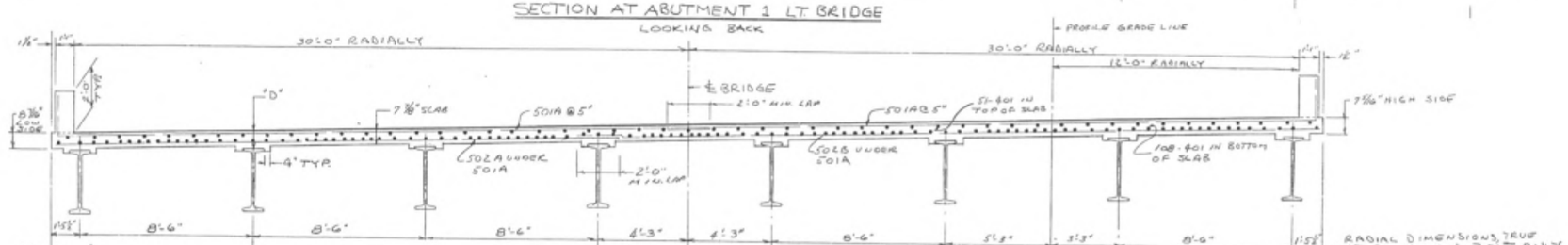
BRIDGE SHEET 4 OF 24

FED. ROAD DIV. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
4	GA.	F-75-3 (10)284	'75	15	76

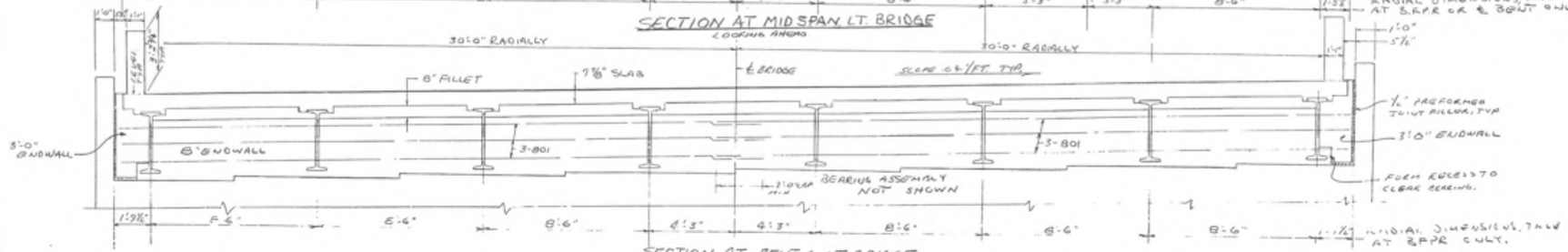
Contract 5



SECTION AT ABUTMENT 1 LT. BRIDGE
LOOKING BACK

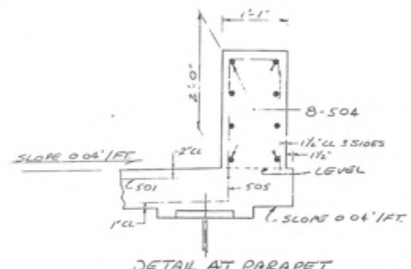


SECTION AT MID SPAN LT. BRIDGE
LOOKING AHEAD



SECTION AT BENT 4 LT. BRIDGE
LOOKING AHEAD

"D" = 8⅛" AND IS TRUE AT ℄ BEARINGS ONLY, VARY COPING BETWEEN ℄ BEARINGS TO COMPENSATE FOR DEAD LOAD DEFLECTION AND VERTICAL CURVE. MAINTAIN CONSTANT 7⅞" SLAB BETWEEN COPINGS.



DETAIL AT PARAPET
SCALE 1"=1'-0"

BRIDGE No. 1 LT.

GEORGIA
DEPARTMENT OF TRANSPORTATION
HIGHWAY DIVISION - BRIDGE DESIGN

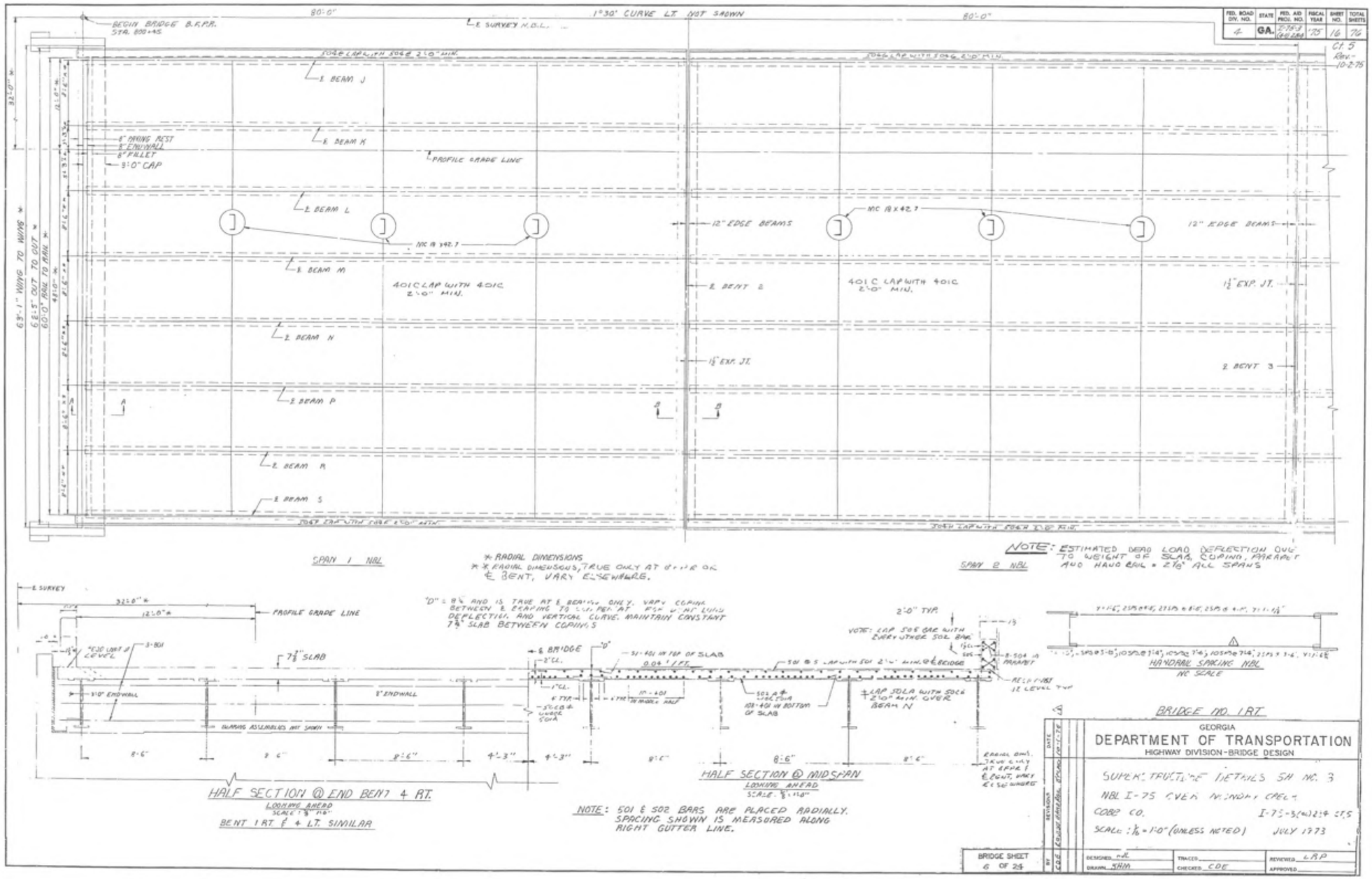
SUPERSTRUCTURE DETAILS SHEET 2
SBL I-75 OVER NOONDAY CREEK
COBB COUNTY I-75-3 (10) 284 C.T.S
SCALE: ⅜"=1'-0" U.N. SEPTEMBER 1974

DESIGNED H.J.L. | TRACED | REVIEWED L.R.P.
DRAWN C.D.E. | CHECKED J.P.T. | APPROVED

BRIDGE SHEET 5 OF 24

FED. ROAD DIV. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
4	GA.	I-75-3 (68) 68A	175	16	76

Cf. 5
Rev.- 10-2-75



SPAN 1 NBL

* RADIAL DIMENSIONS
** RADIAL DIMENSIONS, TRUE ONLY AT ℄ BRIDGE OR ℄ BENT, VARY ELSEWHERE.

SPAN 2 NBL

NOTE: ESTIMATED DEAD LOAD DEFLECTION DUE TO WEIGHT OF SLAB, COPING, BARRIER AND HAND RAIL = 2⅛" ALL SPANS

HALF SECTION @ END BENT 4 AT.
LOOKING AHEAD
SCALE: ⅜" = 1'-0"

BENT 1 AT ℄ & LT. SIMILAR

"D" = 8⅝ AND IS TRUE AT ℄ BEARING ONLY. VARY COPING BETWEEN ℄ BEARING TO ALLOW FOR ANTICIPATED DEFLECTION AND VERTICAL CURVE. MAINTAIN CONSTANT 7⅞ SLAB BETWEEN COPINGS

HALF SECTION @ MIDSPAN
LOOKING AHEAD
SCALE: ⅜" = 1'-0"

NOTE: 501 & 502 BARS ARE PLACED RADIALLY. SPACING SHOWN IS MEASURED ALONG RIGHT GUTTER LINE.

BRIDGE NO. 1 AT

GEORGIA
DEPARTMENT OF TRANSPORTATION
HIGHWAY DIVISION - BRIDGE DESIGN

SUPERSTRUCTURE DETAILS SH NO. 3
NBL I-75 OVER NORFOLK SOUTH
COBB CO. I-75-3(68)234 CFS
SCALE: ⅜" = 1'-0" (UNLESS NOTED) JULY 1973

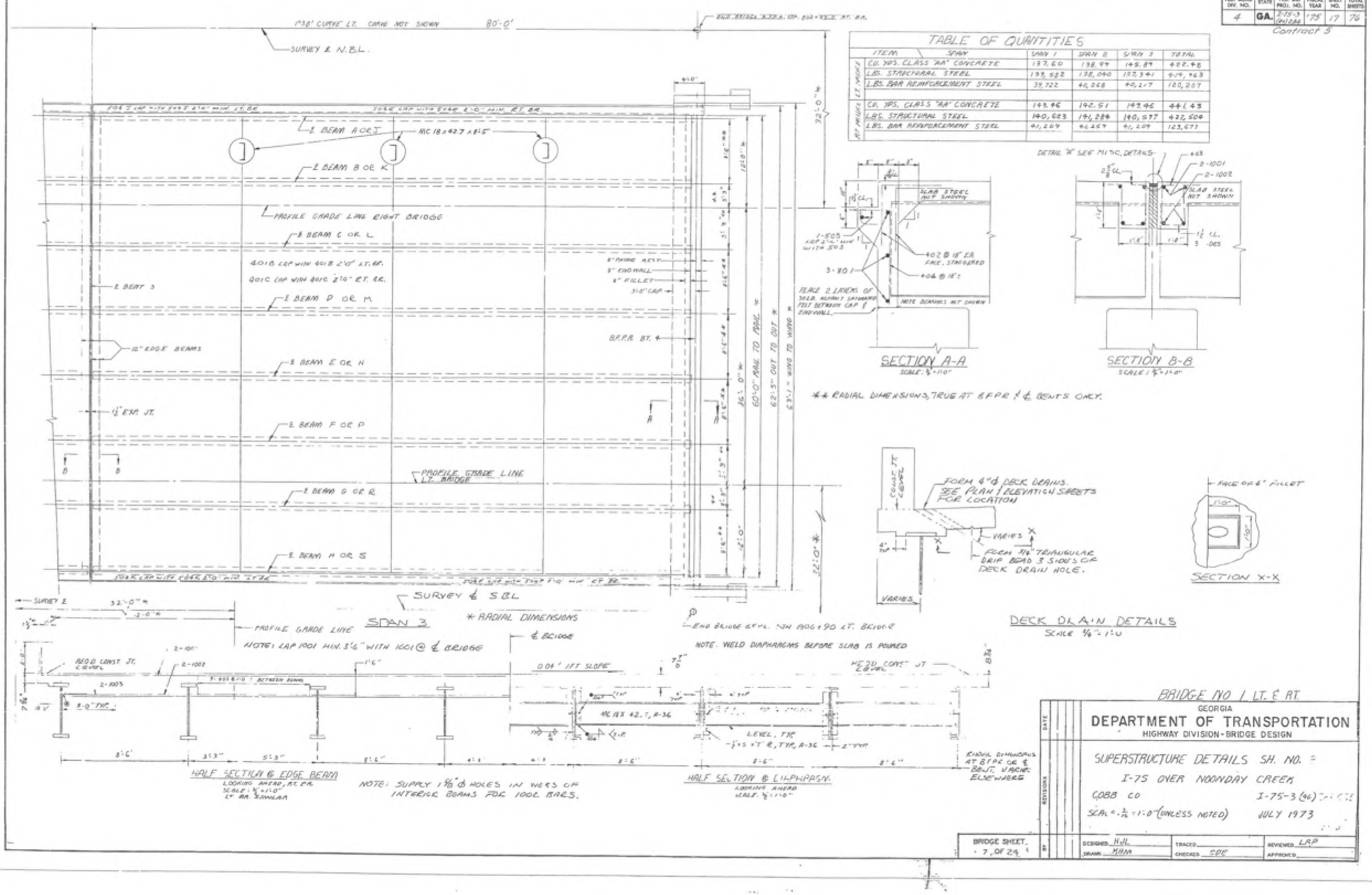
BRIDGE SHEET	DESIGNED	TRACED	REVIEWED
6 OF 24	DRAWN	CHECKED	APPROVED

FED. ROAD DIV. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
4	GA.	I-75-3 (46)126	175	17	76

Contract 5

TABLE OF QUANTITIES

	ITEM / SPAN	SPAN 1	SPAN 2	SPAN 3	TOTAL
LT. BRIDGE	CU. YDS. CLASS "AA" CONCRETE	137.60	138.99	145.89	422.48
	LBS. STRUCTURAL STEEL	139,582	138,040	137,341	419,963
	LBS. BAR REINFORCEMENT STEEL	39,722	40,268	40,217	120,207
RT. BRIDGE	CU. YDS. CLASS "AA" CONCRETE	143.96	142.51	142.96	441.43
	LBS. STRUCTURAL STEEL	140,683	141,284	140,577	422,504
	LBS. BAR REINFORCEMENT STEEL	41,209	40,457	41,209	123,677



BRIDGE NO 1 LT. & RT.

GEORGIA
DEPARTMENT OF TRANSPORTATION
HIGHWAY DIVISION - BRIDGE DESIGN

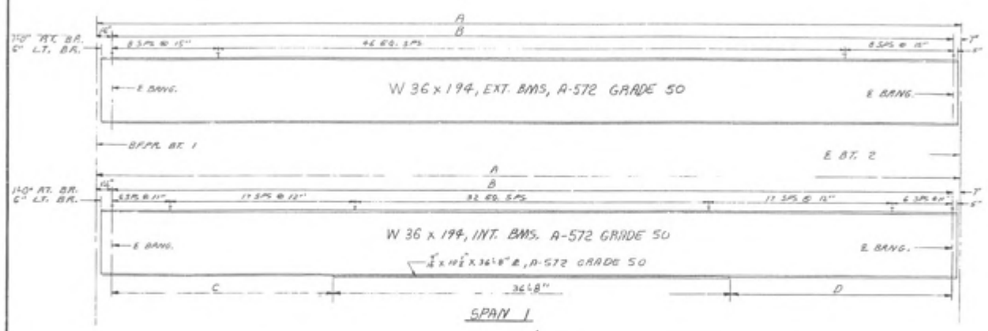
SUPERSTRUCTURE DETAILS SH. NO. 5
I-75 OVER NOONDAY CREEK
COBB CO I-75-3 (46)
SCALE: ¼"=1'-0" (UNLESS NOTED) JULY 1973

BRIDGE SHEET NO. 7 OF 24 SHEETS

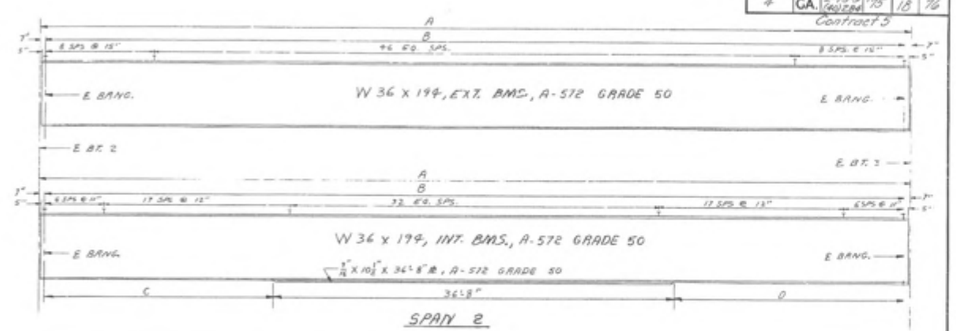
BY	DESIGNED H.W.	TRACED	REVIEWED L.A.P.
	DRAWN M.M.M.	CHECKED S.D.F.	APPROVED

FED. ROAD DIV. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
4	GA.	I-75(3) 140 BR	175	18	76

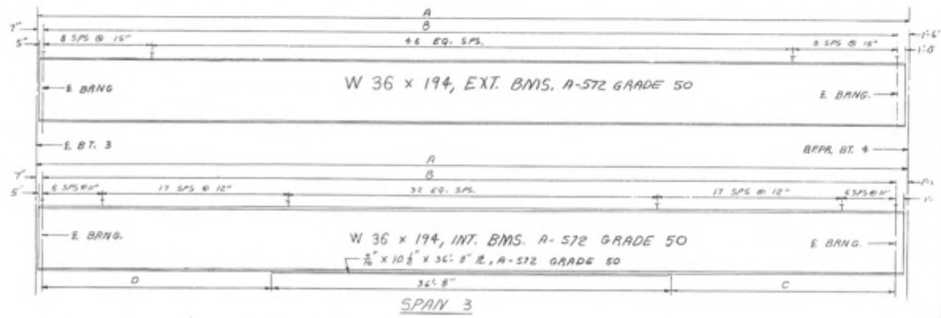
Contract 5



SPAN 1



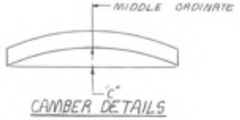
SPAN 2



SPAN 3

TABLE OF LETTERED DIM.

SPAN	DIM. \ BEAM	A	B	C	D	E	F	G	H	J	K	L	M	N	P	R	S
1	A	78'-3 15/16"	78'-6 1/16"	78'-8 3/16"	78'-10 3/16"	79'-0 1/16"	79'-2 5/16"	79'-4 3/16"	79'-6 3/16"	80'-6 1/16"	80'-7 3/16"	80'-9 1/16"	80'-10 3/16"	81'-1 1/16"	81'-3 5/16"	81'-5 3/16"	81'-8"
	B	76'-2 7/16"	76'-5 1/16"	76'-7 3/16"	76'-9 3/16"	76'-11 1/16"	77'-1 1/16"	77'-3 3/16"	77'-5 3/16"	78'-4 3/16"	78'-6 1/16"	78'-8 1/16"	78'-10 1/16"	79'-0 1/16"	79'-2 1/16"	79'-4 3/16"	79'-7"
	C	19'-9 1/16"	19'-10 1/16"	19'-11 1/16"	20'-0 1/16"	20'-1 1/16"	20'-2 1/16"	20'-3 1/16"	20'-4 3/16"	20'-10 3/16"	20'-11 1/16"	21'-0 1/16"	21'-1 1/16"	21'-2 1/16"	21'-3 1/16"	21'-4 3/16"	21'-5 1/16"
	D	19'-9 1/16"	19'-10 1/16"	19'-11 1/16"	20'-0 1/16"	20'-1 1/16"	20'-2 1/16"	20'-3 1/16"	20'-4 3/16"	20'-10"	20'-11"	21'-0 1/16"	21'-1 1/16"	21'-2 1/16"	21'-3 1/16"	21'-4 3/16"	21'-5 1/16"
2	A	78'-3 15/16"	78'-6 1/16"	78'-8 3/16"	78'-10 3/16"	79'-0 1/16"	79'-2 5/16"	79'-4 3/16"	79'-6 3/16"	80'-6 1/16"	80'-7 3/16"	80'-9 1/16"	80'-10 3/16"	81'-1 1/16"	81'-3 5/16"	81'-5 3/16"	81'-8"
	B	77'-1 3/16"	77'-4 3/16"	77'-6 3/16"	77'-8 3/16"	77'-10 3/16"	78'-0 3/16"	78'-2 3/16"	78'-4 3/16"	79'-3 3/16"	79'-5 1/16"	79'-7 1/16"	79'-9 1/16"	79'-11 1/16"	80'-1 3/16"	80'-3 3/16"	80'-5 1/16"
	C	20'-3"	20'-6"	20'-7 1/16"	20'-8 1/16"	20'-9 1/16"	20'-10 1/16"	20'-11 1/16"	21'-0 1/16"	21'-5 1/16"	21'-6 1/16"	21'-7 1/16"	21'-8 1/16"	21'-9 1/16"	21'-10 1/16"	21'-11 1/16"	22'-0"
	D	20'-2 15/16"	20'-5 15/16"	20'-7 15/16"	20'-8 15/16"	20'-9 15/16"	20'-10 15/16"	20'-11 15/16"	21'-0 15/16"	21'-5 15/16"	21'-6 15/16"	21'-7 15/16"	21'-8 15/16"	21'-9 15/16"	21'-10 15/16"	21'-11 15/16"	22'-0"
3	A	78'-3 15/16"	78'-6 1/16"	78'-8 3/16"	78'-10 3/16"	79'-0 1/16"	79'-2 5/16"	79'-4 3/16"	79'-6 3/16"	80'-6 1/16"	80'-7 3/16"	80'-9 1/16"	80'-10 3/16"	81'-1 1/16"	81'-3 5/16"	81'-5 3/16"	81'-8"
	B	76'-2 7/16"	76'-5 1/16"	76'-7 3/16"	76'-9 3/16"	76'-11 1/16"	77'-1 3/16"	77'-3 3/16"	77'-5 3/16"	78'-4 3/16"	78'-6 1/16"	78'-8 1/16"	78'-10 1/16"	79'-0 1/16"	79'-2 1/16"	79'-4 3/16"	79'-7"
	C	19'-9 1/16"	19'-10 1/16"	19'-11 1/16"	20'-0 1/16"	20'-1 1/16"	20'-2 1/16"	20'-3 1/16"	20'-4 3/16"	20'-10 1/16"	20'-11 1/16"	21'-0 1/16"	21'-1 1/16"	21'-2 1/16"	21'-3 1/16"	21'-4 3/16"	21'-5 1/16"
	D	19'-9 1/16"	19'-10 1/16"	19'-11 1/16"	20'-0 1/16"	20'-1 1/16"	20'-2 1/16"	20'-3 1/16"	20'-4 3/16"	20'-10"	20'-11"	21'-0 1/16"	21'-1 1/16"	21'-2 1/16"	21'-3 1/16"	21'-4 3/16"	21'-5 1/16"



CAMBER DETAILS

TABLE OF "C"		
L.T. BR.	INT.	1 3/8"
	EXT.	1 7/16"
R.T. BR.	INT.	2 1/4"
	EXT.	1 3/4"

NOTE: CAMBER INCLUDES WEIGHT OF BEAM, SLAB, COPING, PARAPET & HANDRAIL.

NOTE: FOR FURTHER DETAILS OF COVER PLATES AND SHEAR CONNECTORS SEE MISC. DETAILS.
COVER PL WELD = 5/16" ; TERMINAL WELD = 1/2" ; N = 3

STEEL NOTE

ALL ROLLED BEAMS AND COVER PLATES ARE MAIN LOAD CARRYING MEMBER COMPONENTS SUBJECT TO TENSILE STRESS AND SHALL MEET THE CHARPY V-NOTCH TEST REQUIREMENTS AS SPECIFIED BY SPECIAL PROVISION MODIFYING SECTION 861 OF THE STANDARD SPECIFICATIONS. ALL ROLLED BEAMS AND COVER PLATES SHALL BE ASTM DESIGNATION A-572, GRADE 50.

ALL DIAPHRAGMS AND DIAPHRAGM CONNECTOR MATERIAL SHALL BE ASTM DESIGNATION A-36.

BRIDGE NO. I.T. & A.T.

GEORGIA
DEPARTMENT OF TRANSPORTATION
HIGHWAY DIVISION - BRIDGE DESIGN

STRUCTURAL STEEL DETAILS
I-75 OVER NOONDAY CREEK
COBB CO. [illegible] CT. 5
NO SCALE JULY 1974

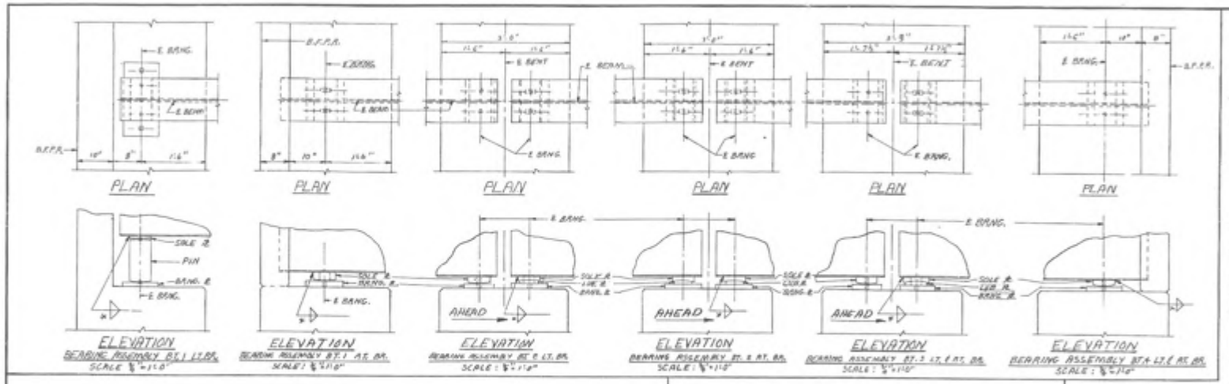
DESIGNED H.N. DRAWN K.H.M. TRACED CHECKED J.P.T. REVIEWED L.A.P. APPROVED

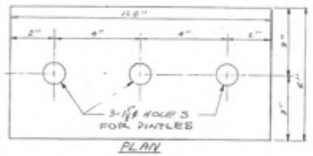
BRIDGE SHEET 8 OF 24

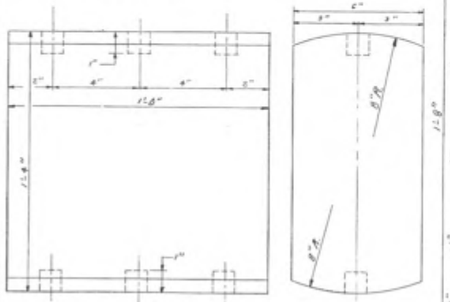
DATE | REVISIONS | BY

FED. ROAD DIV. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
4	GA.	I-75-3 (66) 284	175	19	76

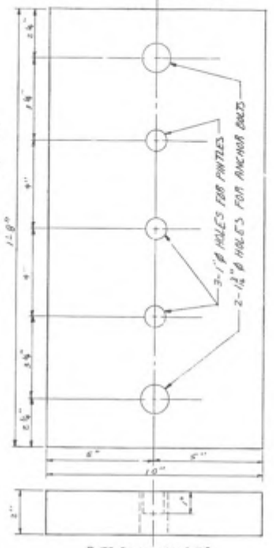
Contract 5







PIN
BEARING ASSEMBLY
BENT 1 LT.



BEARING PLATE
BENT 1 LT.

NOTE: FOR FURTHER DETAILS OF PINTLES, SEE MISC. DETAILS.

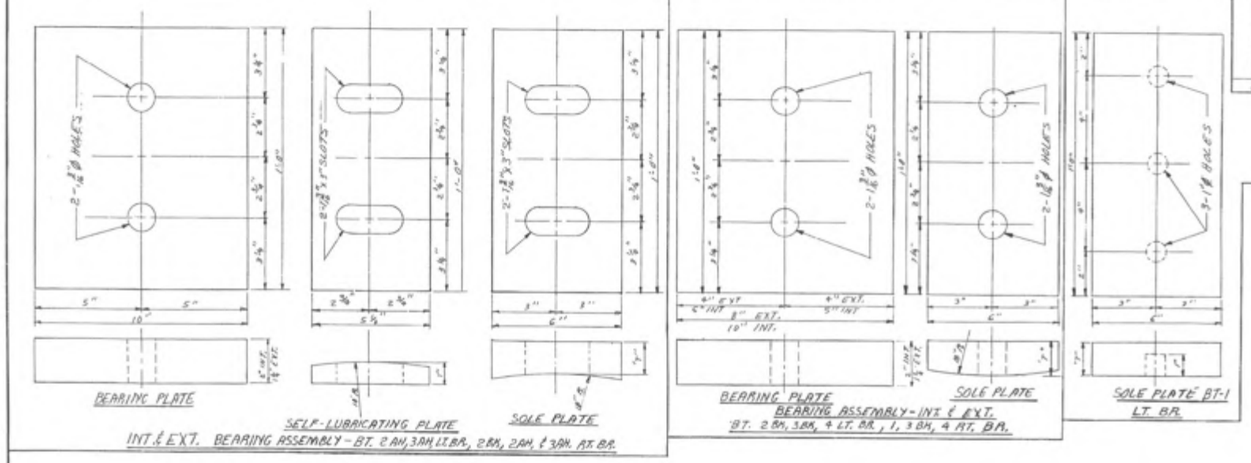


TABLE OF "T" DIMENSIONS

BENT \ BEAM	A	B	C	D	E	F	G	H	J	K	L	M	N	P	R	S
1	1⅛"	1⅛"	1⅛"	1⅛"	1⅛"	1⅛"	1⅛"	1⅛"	1⅛"	1⅛"	1⅛"	1⅛"	1⅛"	1⅛"	1⅛"	1⅛"
2 BH	2⅛"	2⅛"	2⅛"	2⅛"	2⅛"	2⅛"	2⅛"	2⅛"	1⅞"	1⅝"	1⅞"	1⅝"	1⅝"	1⅝"	1⅝"	1⅝"
2 AH	1⅛"	1⅛"	1⅛"	1⅛"	1⅛"	1⅛"	1⅛"	1⅛"	1⅛"	1⅛"	1⅛"	1⅛"	1⅛"	1⅛"	1⅛"	1⅛"
3 BH	2⅛"	2⅛"	2⅛"	2⅛"	2⅛"	2⅛"	2⅛"	2⅛"	2⅛"	2⅛"	2⅛"	2⅛"	2⅛"	2⅛"	2⅛"	2⅛"
3 AH	1⅛"	1⅛"	1⅛"	1⅛"	1⅛"	1⅛"	1⅛"	1⅛"	1⅛"	1⅛"	1⅛"	1⅛"	1⅛"	1⅛"	1⅛"	1⅛"
4	1⅜"	1⅜"	1⅜"	1⅜"	1⅜"	1⅜"	1⅜"	1⅜"	1⅜"	1⅜"	1⅜"	1⅜"	1⅜"	1⅜"	1⅜"	1⅜"

ANCHOR BOLT NOTE

ALL ANCHOR BOLTS SHALL BE 1" ø SYNEDGED WITH ASA HEX. NUT AND ½"x 3" PLATE WASHER.

STEEL NOTE

ALL STEEL COMPONENTS OF BEARING ASSEMBLIES SHALL BE ASTM DESIGNATION A-36.

WELDING NOTE

* ALL WELDS, SOLE PLATE TO FLANGE, SHALL BE A.R.S.MO. MIN. FILLET WELDS.

BRIDGE NO. 1 LT. & RT.

GEORGIA
DEPARTMENT OF TRANSPORTATION
HIGHWAY DIVISION - BRIDGE DESIGN

BEARING DETAILS

N.B.L. & S.B.L. I-75 OVER NOONDAY CREEK

COBB CO. I-75-3(66)284 C.S.

SCALE: ⅛"=1'-0" (UNLESS NOTED) JULY 1979

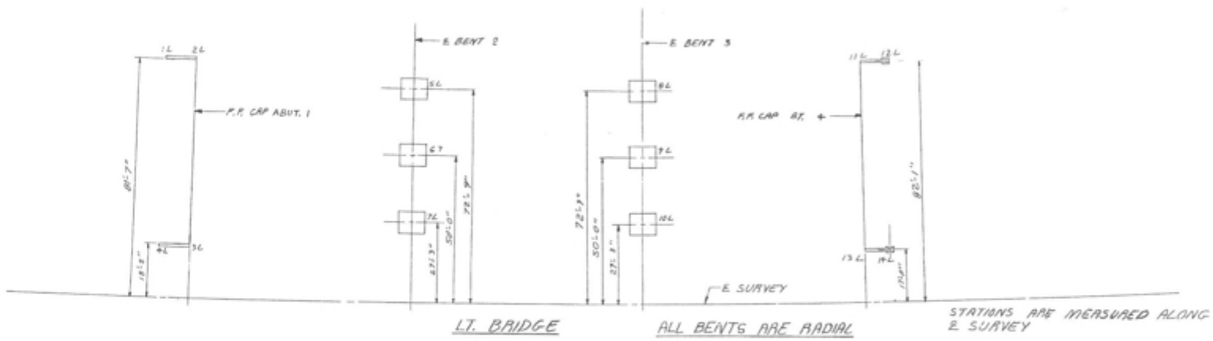
DATE | REVISIONS | BY

DESIGNED HJL | TRACED | REVIEWED CAP
DRAWN MHM | CHECKED CDE | APPROVED

BRIDGE SHEET 9 OF 24

FED. ROAD DIV. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
4	GA.	I-75-3 (46) 264	'75	20	76

Contract 5



L.T. BRIDGE

ALL BENTS ARE RADIAL

STATIONS ARE MEASURED ALONG E SURVEY

TABLE OF STATIONS	
POINT	STA.
1L	804+91.39
2L	804+53.07
3L	804+53.01
4L	804+92.46
5L	805+30.9
6L	805+30.8
7L	805+30.6
8L	806+10.0
9L	806+10.0
10L	806+10.0
11L	806+86.93
12L	806+95.88
13L	806+86.99
14L	806+95.78

NOTE: STATIONS AT INTERMEDIATE BENTS ARE GIVEN AT E COLUMN AT E BENT. STATIONS AT ABUTMENT 1 ARE GIVEN AT INSIDE FACE OF WING AT F.F. CAP AND AT END OF WING. STATIONS AT BENT 4 ARE GIVEN AT INTERSECTION OF F.F. CAP AND INSIDE FACE OF WING AND AT E WING PILE.

BRIDGE NO. 1L1.

GEORGIA
DEPARTMENT OF TRANSPORTATION
HIGHWAY DIVISION - BRIDGE DESIGN

SUBSTRUCTURE LAYOUT SHEET 1
SBL I-75 OVER NOONDAY CREEK
COBB CO. I-75-3(46)264 CR 5
SCALE: 1"=20'-0" FEB. 1975

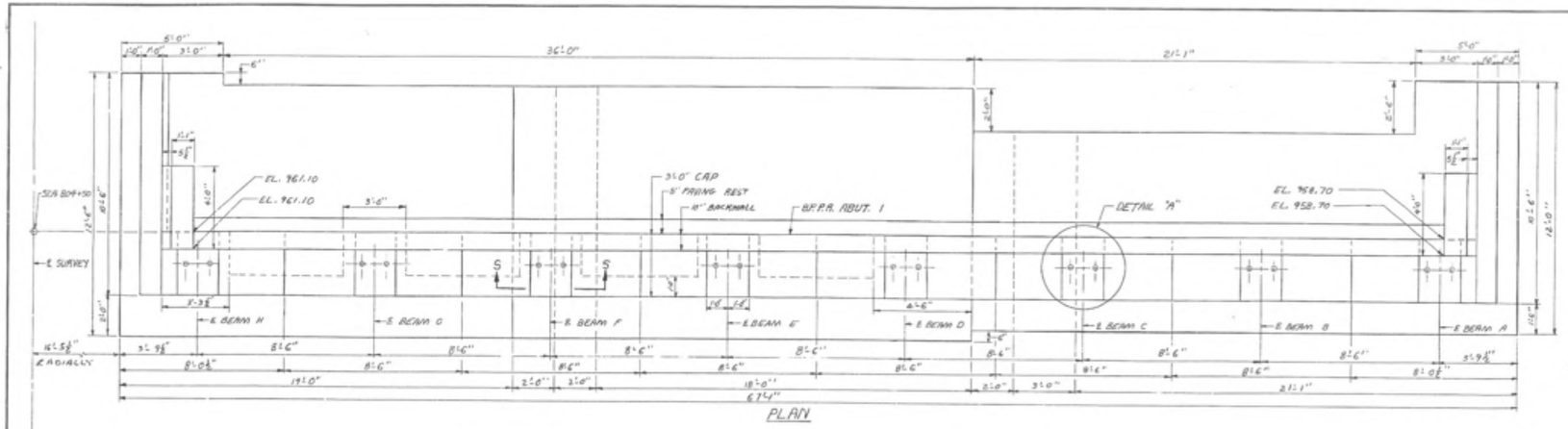
BRIDGE SHEET 10 OF 24

DESIGNED NJL DRAWN HMM TRACED CHECKED JPT REVIEWED LAP APPROVED

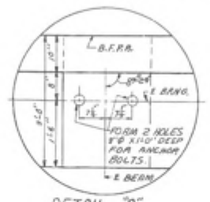
REVISIONS BY DATE

FED. ROAD DIV. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
4	GA.	I-75-3 (40)288	'75	21	76

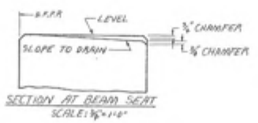
Contract 5
Rev 6-10-75



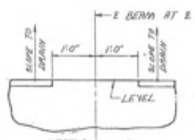
PLAN



DETAIL "A"
SCALE: ½"=1'-0"

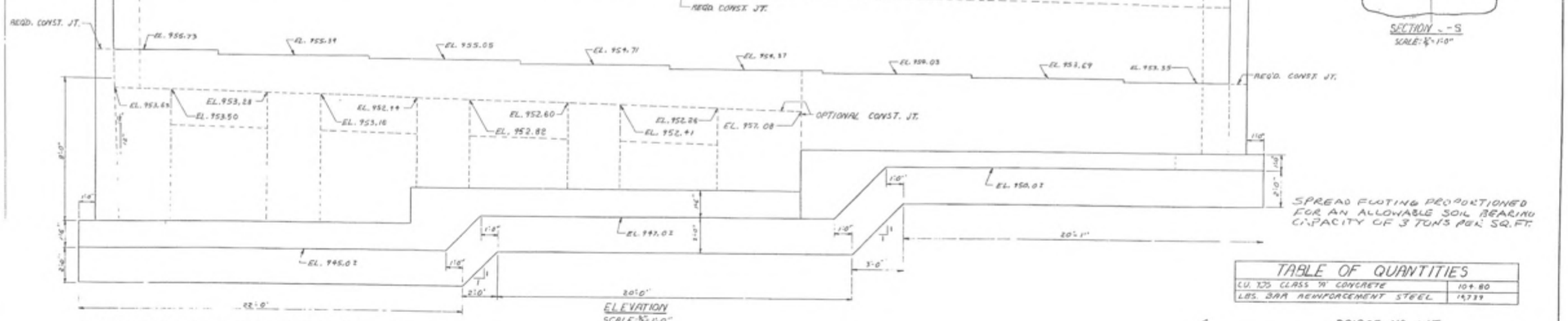


SECTION AT BEAM SEAT
SCALE: ½"=1'-0"



SECTION C-S
SCALE: ½"=1'-0"

"CAP ELEVATIONS" SHOWN ARE AT BEAM SEAT.



ELEVATION
SCALE: ½"=1'-0"
LOOKING BACK

SPREAD FOOTING PROPORTIONED FOR AN ALLOWABLE SOIL BEARING CAPACITY OF 3 TONS PER SQ. FT.

KEY EXCAVATION SHALL BE DONE AS NEAR PLANS AS PRACTICAL. KEY SHALL BE POURED AGAINST UNDISTURBED SOIL AND WITHOUT FORMS.

EXCAVATION FOR SPREAD FOOTING SHALL BE DONE WITH CARE TO PREVENT UNDERCUTTING. FOOTING SHALL BE POURED AGAINST UNDISTURBED SOIL.

TABLE OF QUANTITIES	
CU. YDS. CLASS "A" CONCRETE	104.80
LBS. BAR REINFORCEMENT STEEL	14739

BRIDGE NO. 1 LT.

GEORGIA
DEPARTMENT OF TRANSPORTATION
HIGHWAY DIVISION - BRIDGE DESIGN

ABUTMENT 1 LT. DETAILS SH. NO. 1
SBL I-75 OVER NOONDAY CR. SEA
COBB CO. I-75-3(40)288 CCS
SCALE: AS SHOWN AUG. 1974

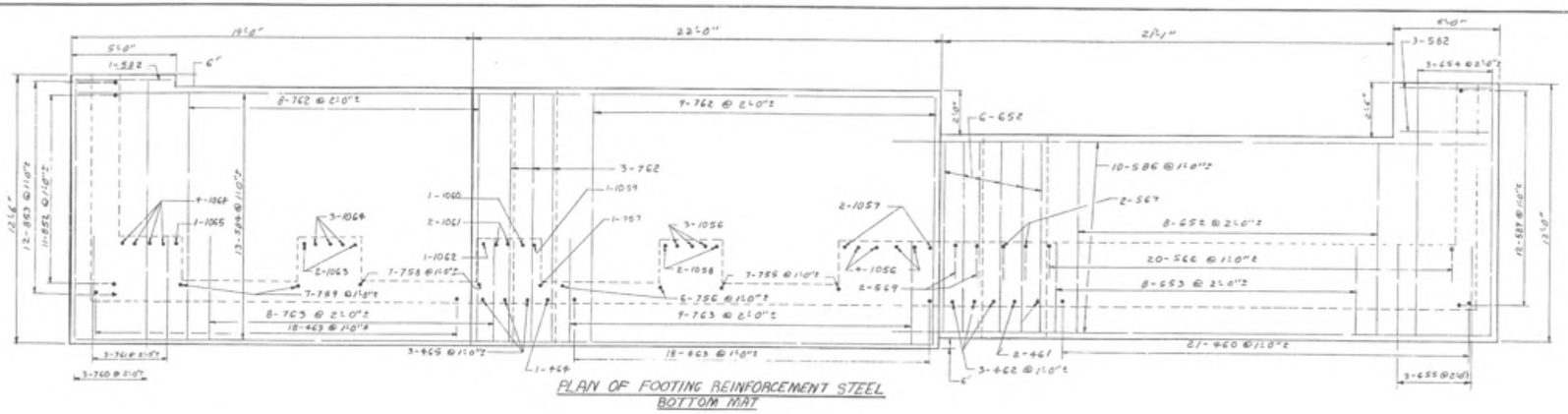
REVISIONS: DATE 6-10-75 — BY: DESCRIPTION: CHANGE

DESIGNED JVE | TRACED | REVIEWED GAP
DRAWN RHM | CHECKED CDE | APPROVED

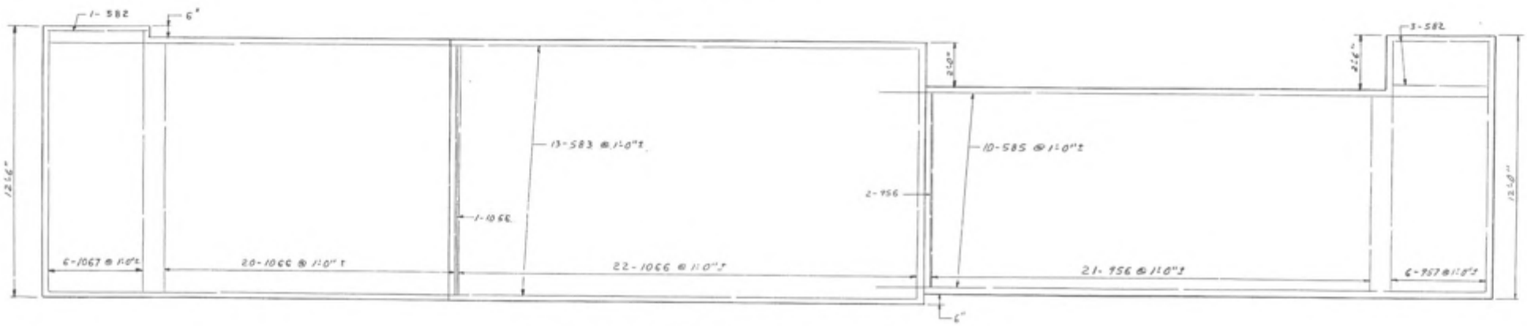
BRIDGE SHEET 11 OF 24

FED. ROAD DIV. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
4	GA.	I-75-3 (80)288	175	22	76

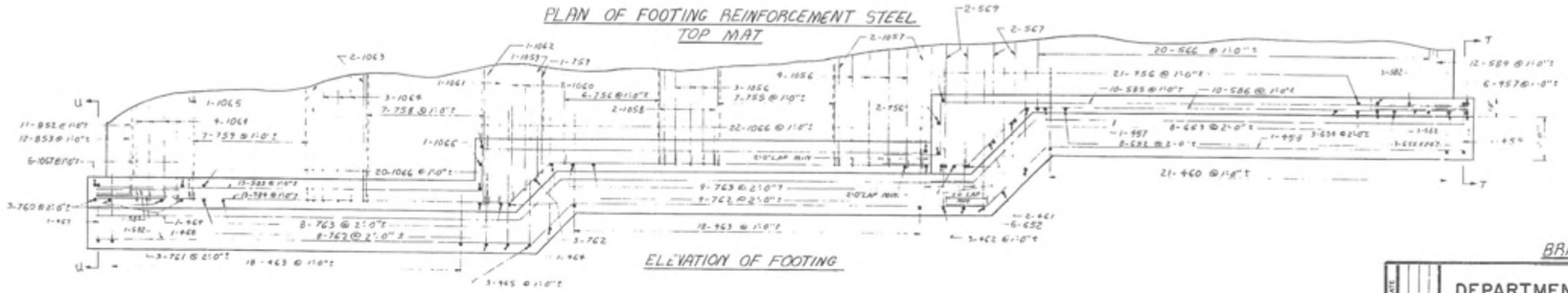
Contract 5



PLAN OF FOOTING REINFORCEMENT STEEL
BOTTOM MAT



PLAN OF FOOTING REINFORCEMENT STEEL
TOP MAT



ELEVATION OF FOOTING

BRIDGE NO. 1 L.T.

GEORGIA
DEPARTMENT OF TRANSPORTATION
HIGHWAY DIVISION - BRIDGE DESIGN

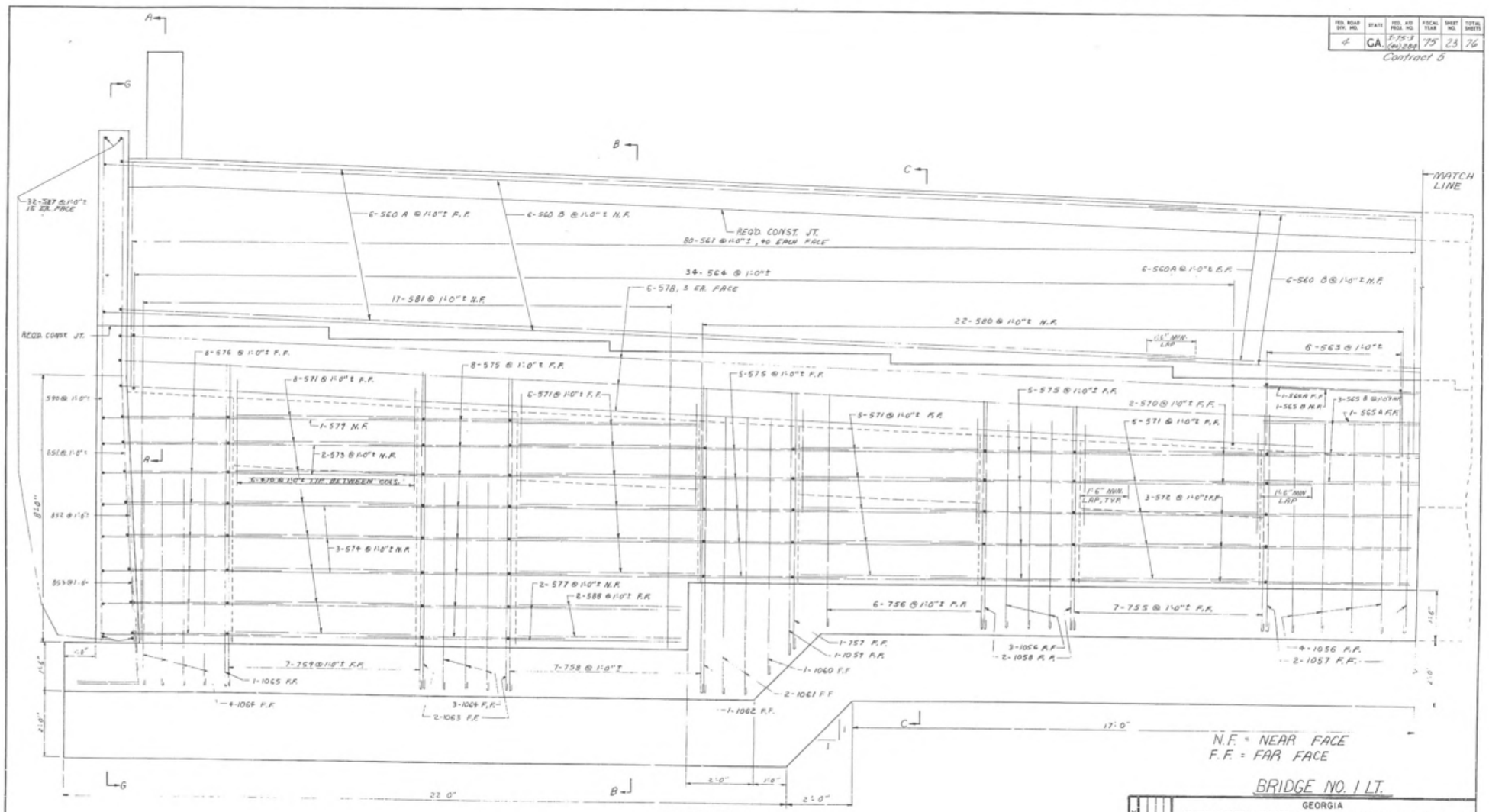
ABUTMENT 1 LT. DETAILS SH. NO. 2
SBL I-75 OVER NOONDAY CREEK
COBB CO
I-75-3(80)288 CTS
SCALE: 1/8" = 1'-0"
AUG. 1974

BRIDGE SHEET
12 OF 24

DESIGNED HJL	TRACED	REVIEWED LRP
DRAWN HHM	CHECKED CDE	APPROVED

FED. ROAD DIV. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
4	GA.	F-75-3 (40)284	'75	23	76

Contract 5



N.F. = NEAR FACE
F.F. = FAR FACE

ELEVATION
LOOKING BACK

BRIDGE NO. 1 LT.

GEORGIA
DEPARTMENT OF TRANSPORTATION
HIGHWAY DIVISION - BRIDGE DESIGN

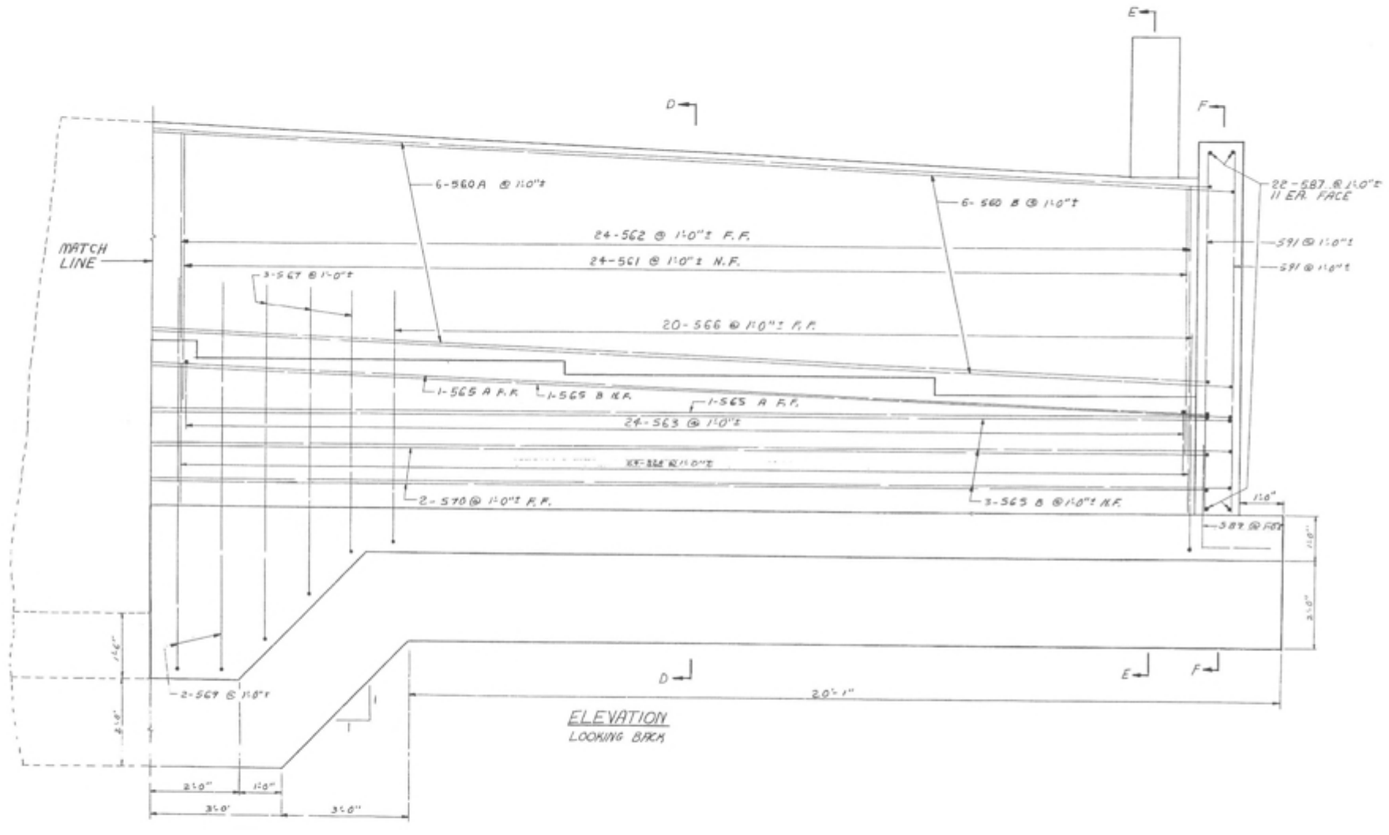
ABUTMENT 1 LT. DETAILS SH. NO. 3
SBL I-75 OVER NOONDAY CREEK
COBB CO. I-75-3 (40) 284 C.S.
SCALE: 3/8"=1'-0" AUG. 1974

BRIDGE SHEET 13 OF 24

DESIGNED HJL	TRACED	REVIEWED LAP
DRAWN BMM	CHECKED CDE	APPROVED

FED. ROAD DIV. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
4	GA.	I-75-3 (44)284	'75	24	76

Contract 5



ELEVATION
LOOKING BACK

N.F. = NEAR FACE
F.F. = FAR FACE

BRIDGE NO. 1 L.T.

GEORGIA
DEPARTMENT OF TRANSPORTATION
HIGHWAY DIVISION - BRIDGE DESIGN

ABUTMENT 1 L.T. DETAILS SH. NO. 4
SBL I-75 OVER NOONDAY CREEK
COBB CO. I-75-3(44)284 C.T.S
SCALE: 3/8"=1'-0" AUG. 1974

BRIDGE SHEET 14 OF 24

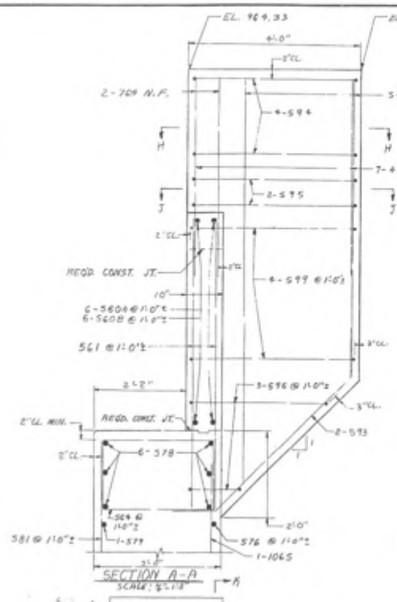
DESIGNED NWL | TRACED | REVIEWED LRP
DRAWN BMM | CHECKED CDE | APPROVED

DATE | REVISIONS | BY

22"
17"
11"
8.5"

FED. ROAD DIV. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
4	GA.	I-75-3 (40)284	'75	25	76

Contract 5
Rev. 6-10-75



BRIDGE NO. 1 L.T.

GEORGIA
DEPARTMENT OF TRANSPORTATION
HIGHWAY DIVISION - BRIDGE DESIGN

ABUTMENT 1 L.T. DETAILS SH. NO. 5
SBL I-75 OVER NOONDAY CREEK
COBB CO. I-75 - 3 (40)284 CTS
SCALE: AS SHOWN JULY 1974

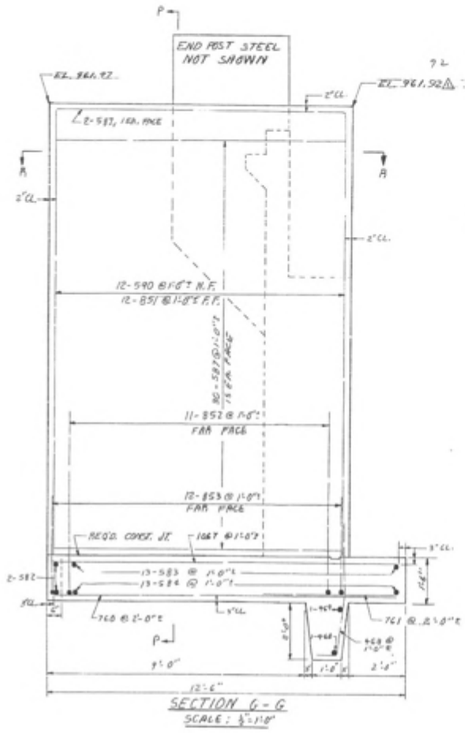
BRIDGE SHEET
15 OF 24

REVISIONS	BY	DATE
ADDITION & REVISION		8-4-75

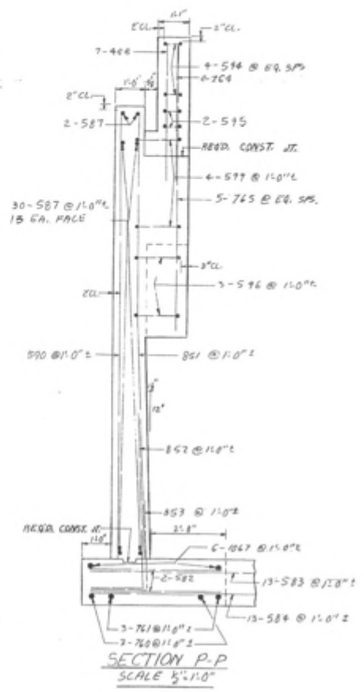
DESIGNED H.J.C. DRAWN K.H.M. TRACED C.D.E. CHECKED L.A.P. REVIEWED L.A.P. APPROVED

FED. ROAD DIV. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
4	GA.	I-75-3 (40)284	'75	26	76

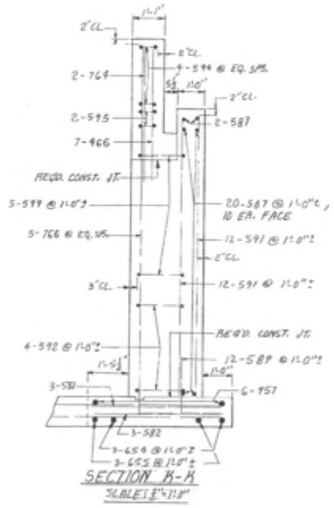
Contract 5
Rev. 6-10-75



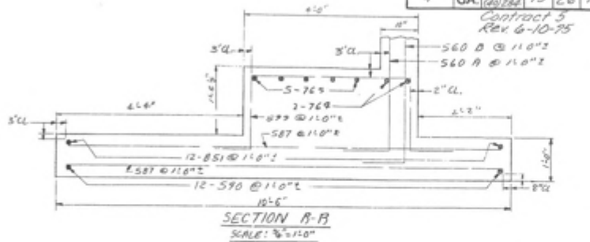
SECTION G-G
SCALE: 3/8"=1'-0"



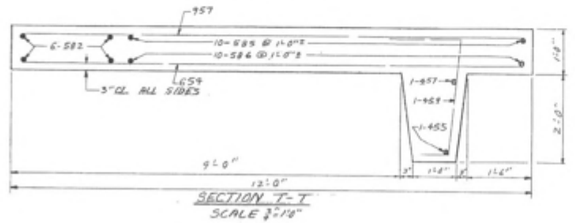
SECTION P-P
SCALE 3/8"=1'-0"



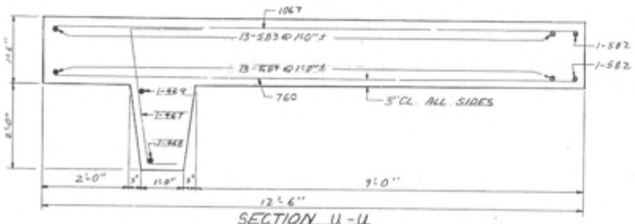
SECTION K-K
SCALE 3/8"=1'-0"



SECTION A-A
SCALE: 3/8"=1'-0"



SECTION T-T
SCALE 3/8"=1'-0"



SECTION U-U
SCALE 3/8"=1'-0"

BRIDGE NO. 1 L.T.

GEORGIA
DEPARTMENT OF TRANSPORTATION
HIGHWAY DIVISION - BRIDGE DESIGN

ABUTMENT 1 L.T. DETAILS SH. NO. 6
SBL I-75 OVER NOONDAY CREEK
COBB CO. I-75-3(40)284 CT.S
SCALE: AS SHOWN AUG., 1974

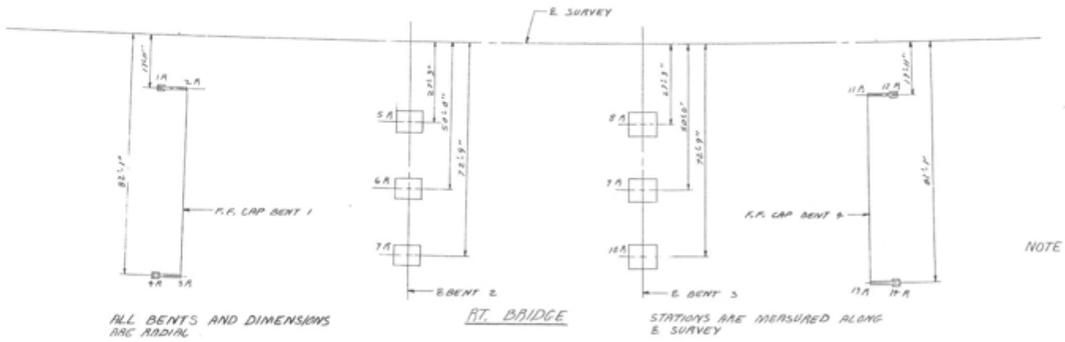
BRIDGE SHEET 16 OF 24

BY	REVISIONS	DATE
	REVISED CONST. JT.	6-10-75

DESIGNED H.J.L. TRACED
DRAWN MMM CHECKED CDE
REVIEWED L.A.P. APPROVED

FED. ROAD DIV. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
4	GA.	I-75-3 (40)284	'75	27	76

Contract 5



ALL BENTS AND DIMENSIONS ARE RADIAL.

RT. BRIDGE

STATIONS ARE MEASURED ALONG E. SURVEY

TABLE OF STATIONS	
POINT	STATION
1A	800+34.43
2A	800+62.99
3A	800+67.99
4A	800+33.37
5A	801+25.00
6A	801+25.00
7A	801+25.00
8A	802+05.00
9A	802+05.00
10A	802+05.00
11A	802+82.01
12A	802+30.76
13A	802+82.06
14A	802+32.63

NOTE: STATIONS FOR INTERMEDIATE BENTS ARE GIVEN AT THE INTERSECTION OF Ł COL. AND E BENT. STATIONS AT END BENTS ARE AT FRONT FACE OF CAP @ INSIDE FACE OF WING AND AT E WING PILE.

BRIDGE NO. 1 RT.

GEORGIA
DEPARTMENT OF TRANSPORTATION
HIGHWAY DIVISION - BRIDGE DESIGN

SUBSTRUCTURE LAYOUT SHEET 2
NBL I-75 OVER NOONDAY CREEK
COBB CO. I-75-3(40)284 CT. 5
SCALE: 1"= 20'-0" FEB. 1975

BRIDGE SHEET 17 OF 24

DESIGNED NJL DRAWN RNM TRACED CHECKED JPT REVIEWED LAP APPROVED

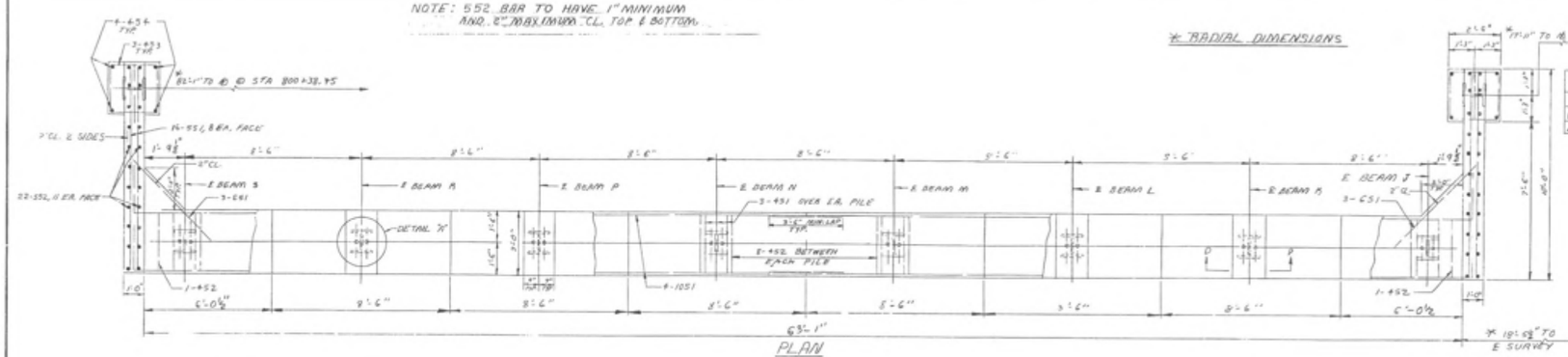
FED. ROAD DIV. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
4	GA.	I-75-3 (20)284	'75	28	76

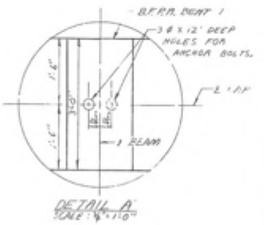
Contract 3

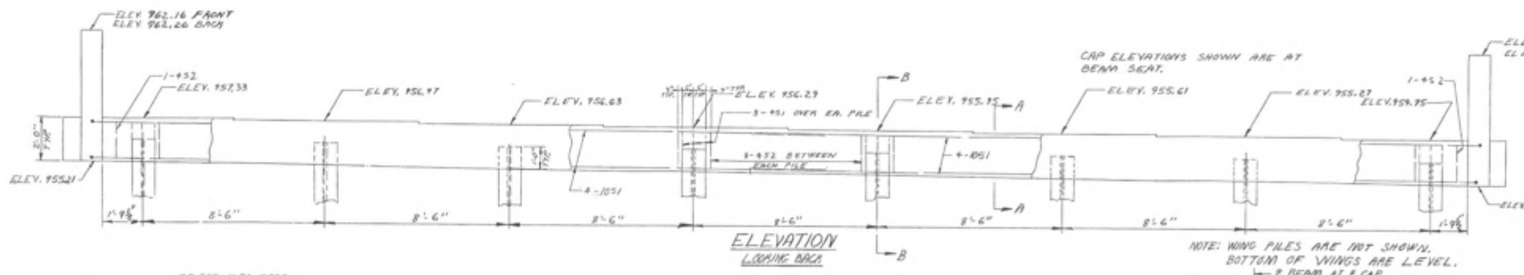
NOTE: 552 BAR TO HAVE 1" MINIMUM AND 2" MAXIMUM CL. TOP & BOTTOM.

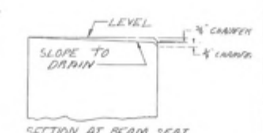
* RADIAL DIMENSIONS

TABLE OF QUANTITIES		
ITEM	BENT	I RT
CU. YDS. OF CLASS "A" CONCRETE		21.37
LBS. BAR REINFORCEMENT STEEL		2446

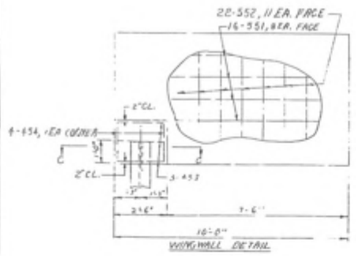


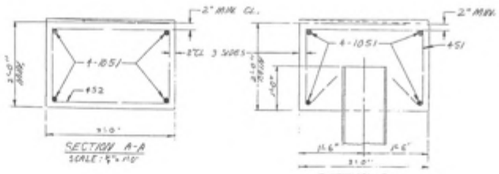


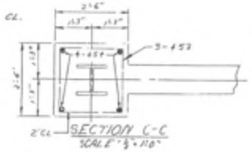


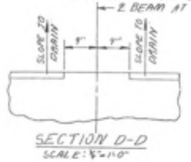


NOTE: WING PILES ARE NOT SHOWN. BOTTOM OF WINGS ARE LEVEL.









PILE DRIVING CRITERIA
PILES SHALL BE PRACTICAL REFUSAL WITH A MINIMUM TIP ELEVATION OF 940.0 AS NEEDED.

EXPOSE: NC IRT

GEORGIA
DEPARTMENT OF TRANSPORTATION
HIGHWAY DIVISION - BRIDGE DESIGN

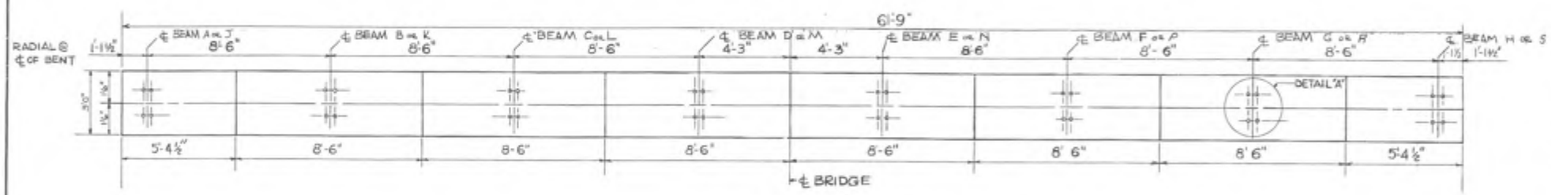
END BENT 1 RT.
N.B.L. I-75 OVER NOONDAY CREEK
COBB CO. I-75-3(20)284 C.T.S.
SCALE: 3/8"=1'-0" (UNLESS NOTED) MAR. 1973

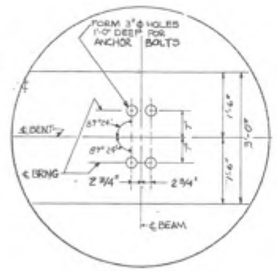
BRIDGE SHEET 18 OF 24	BY	DESIGNED LWL	TRACED	REVIEWED LRP
		DRAWN MMM	CHECKED CDE	APPROVED

FED. ROAD DIV. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
4	GA.	I-75-3 (90) 289	175	29	76

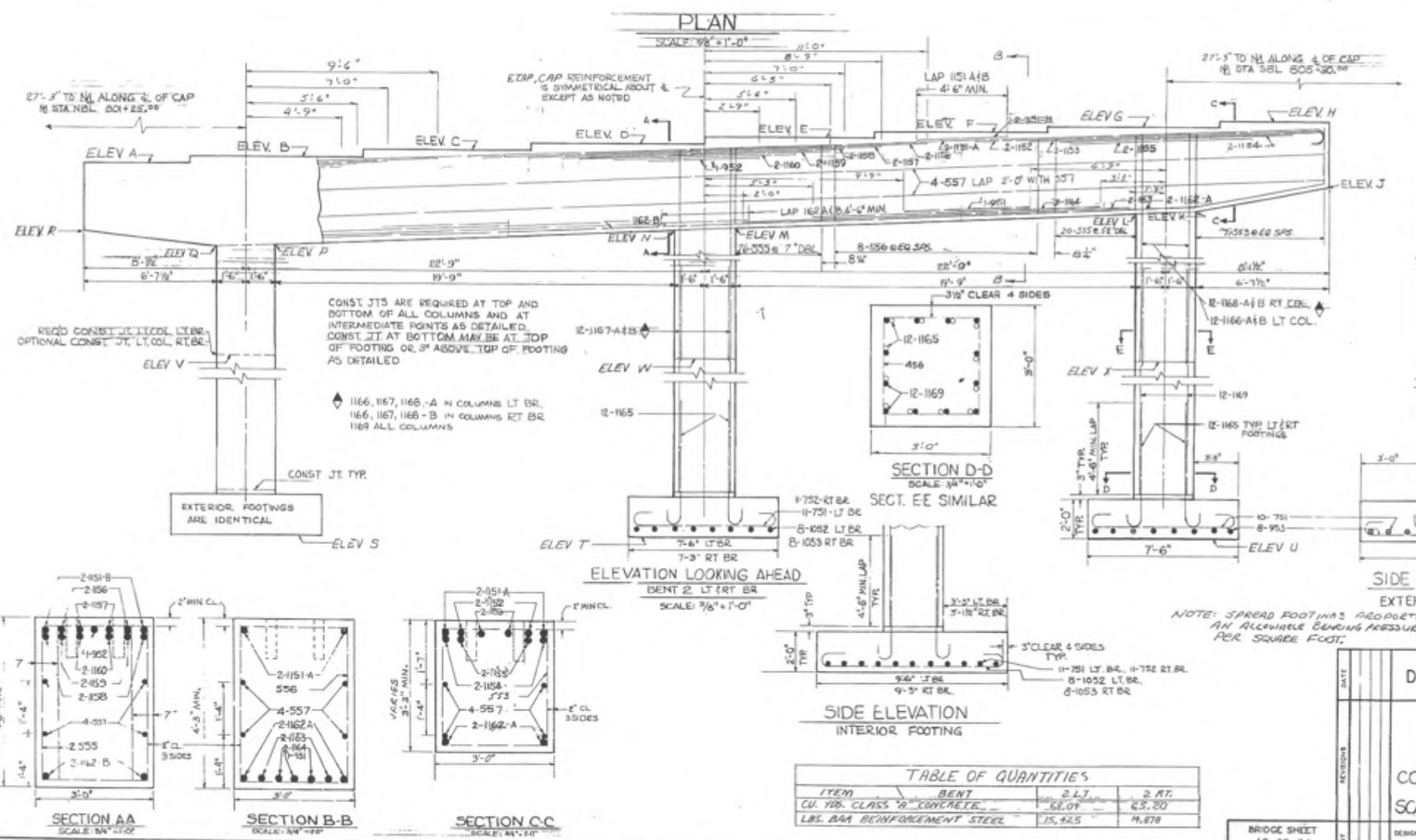
Contract 5

	A	B	C	D	E	F	G	H	J	K	L	M	N	P	Q	R	S	T	U	V	W	X
RT BR	955.20	954.52	954.86	955.20	955.54	955.88	956.22	956.58	953.18	951.92	951.80	951.01	950.89	950.10	949.78	950.76	931±	927±	927±	943±	939±	939±
LT BR	954.38	954.70	955.04	955.38	955.72	956.06	956.40	956.76	953.36	952.10	951.98	951.19	951.07	950.28	950.16	950.89	926±	926±	926±	938±	938±	938±





DETAIL "A"
SCALE: ½" = 1'-0"



ELEVATION LOOKING AHEAD
BENT 2 LT & RT BR
SCALE: 3/16" = 1'-0"

SECT. EE SIMILAR

SECTION D-D
SCALE: ¼" = 1'-0"

SIDE ELEVATION
EXTERIOR FOOTING

SIDE ELEVATION
INTERIOR FOOTING

NOTE: SPREAD FOOTINGS PROPORTIONED FOR AN ALLOWABLE BEARING PRESSURE OF 5 TONS PER SQUARE FOOT.

TABLE OF QUANTITIES		
ITEM / BENT	2 LT.	2 RT.
CU. YDS. CLASS "A" CONCRETE	52.09	63.20
LBS. BAR REINFORCEMENT STEEL	15,415	19,878

BRIDGE SHEET 19 OF 24

BR. NO. 1 LT. & RT.

GEORGIA
DEPARTMENT OF TRANSPORTATION
HIGHWAY DIVISION - BRIDGE DESIGN

INTERMEDIATE BENT 2LT & 2RT
I-75 OVER NOONDAY CREEK
COBB COUNTY I-75-3 (90) 289 CT. 5
SCALE AS SHOWN AUG. 1973

DESIGNED H.N.L.	TRACED	REVIEWED L.R.R.
DRAWN W.J.M.	CHECKED C.D.E.	APPROVED

FED. ROAD DIV. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
4	GA.	F-75-3 (21)	'75	30	76

Contract 5

TABLE OF ELEVATIONS

BENT \ ELEV.	A	B	C	D	E	F	G	H	J	M	L	M	N	P	Q	R	S	T
3 RT	958.70	958.02	957.36	956.70	955.04	955.38	955.72	954.08	952.68	951.42	951.29	950.51	950.38	949.60	948.67	950.21	949.07	951.50
3 ℄	958.36	958.68	957.02	955.36	955.70	956.04	956.38	956.79	953.34	952.08	951.75	951.17	951.04	950.26	950.13	950.87	949.51	948.00

TABLE OF QUANTITIES

ITEM \ BENT	3 LT.	3 RT.
CU. YDS. CLASS 'A' CONCRETE	76.81	89.67
LBS. BAR REINFORCEMENT STEEL	18,535	21,387

RADIAL @ ℄ OF BENT

℄ BEAM A OR J 8'-6" | ℄ BEAM B OR K 8'-6" | ℄ BEAM C OR L 8'-6" | ℄ BEAM D OR M 4'-3" | 4'-3" | ℄ BEAM E OR N 8'-6" | ℄ BEAM F OR P 8'-6" | ℄ BEAM G OR A 8'-6" | ℄ BEAM H OR S

61'-9"

5'-4½" | 8'-6" | 8'-6" | 8'-6" | 8'-6" | 8'-6" | 8'-6" | 5'-4½"

DETAIL 'A'

PLAN

℄ CAP, CAP REINFORCEMENT IS SYMMETRICAL ABOUT THIS LINE.

27'-8" TO ℄ ALONG ℄ OF CAP
℄ STA. NBL = 802+050

27'-3" TO ℄ ALONG ℄ OF CAP
℄ STA SBL = 806+10.0

ELEV. A | ELEV. B | ELEV. C | ELEV. D | ELEV. E | ELEV. F | ELEV. G | ELEV. H | ELEV J | ELEV. K | ELEV. L | ELEV. M | ELEV. N | ELEV. P | ELEV. R | EL T

CONSTRUCTION JOINTS ARE REQUIRED AT TOP, BOTTOM AND AT INTERMEDIATE POINTS OF ALL COLUMNS. CONSTRUCTION JOINT AT BOTTOM OF COLUMN MAY BE AT TOP OF FOOTING OR 3" ABOVE TOP OF FOOTING AS DETAILED.

CONST JT

SECTION D-D
SCALE 3/4" = 1'-0"
SECT. EE SIMILAR

ELEVATION LOOKING AHEAD
SCALE 3/8" = 1'-0"

SIDE ELEVATION
INTERIOR FOOTING

SIDE ELEVATION
EXTERIOR FOOTING

NOTE: SPREAD FOOTINGS ARE PROPORTIONED FOR AN ALLOWABLE BEARING PRESSURE OF 5 TONS PER SQUARE FOOT.

DETAIL 'A'
SCALE: 3/8" = 1'-0"

SECTION A-A
SECTION B-B
SECTION C-C

BR. NO. 1 LT & RT.

GEORGIA
DEPARTMENT OF TRANSPORTATION
HIGHWAY DIVISION - BRIDGE DESIGN

INTERMEDIATE BENT 3 LT & RT.
I-75 OVER NOONDAY CREEK
COBB COUNTY — I-75-3 (40) 284 of c
SCALE: AS SHOWN — AUG. 1973

BRIDGE SHEET 20 OF 24

DESIGNED TPT | TRACED | REVIEWED LRP
DRAWN WJM | CHECKED CDE | APPROVED

FED. ROAD DIV. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
4	GA.	I-75-3 (4?) 284	'75	31	76

Contract 5

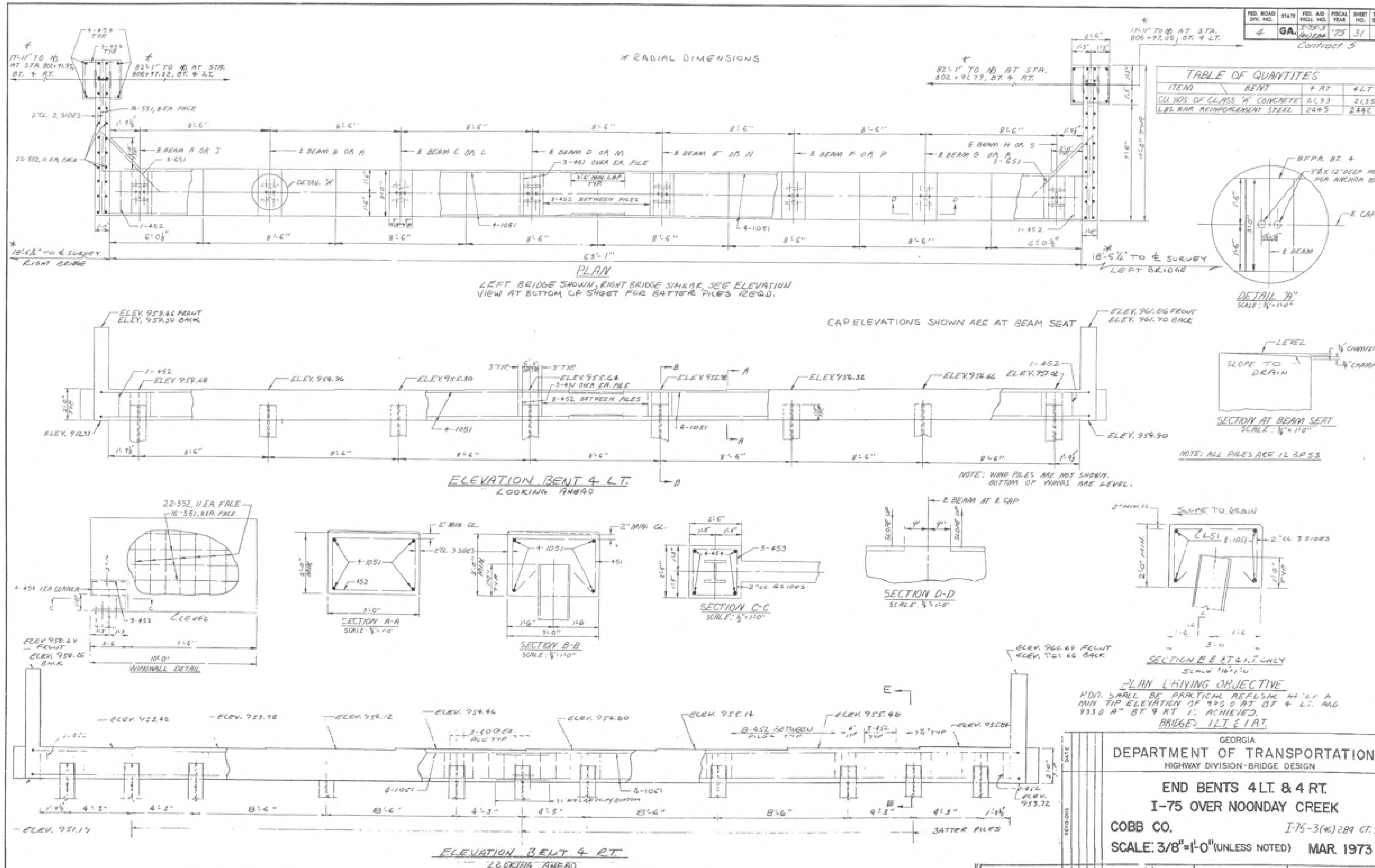


TABLE OF QUANTITES		
ITEM \ BENT	4 RT	4 LT
CU. YDS OF CLASS "A" CONCRETE	21.93	21.35
LBS. BAR REINFORCEMENT STEEL	2445	2442

PLAN DRIVING OBJECTIVE

P.D.O. SHALL BE PRACTICAL REFUSAL AFTER A MIN TIP ELEVATION OF 945.0 AT BT 4 LT. AND 933.0 AT BT 4 RT IS ACHIEVED.

BRIDGES 1 LT. & 1 RT.

GEORGIA
DEPARTMENT OF TRANSPORTATION
HIGHWAY DIVISION-BRIDGE DESIGN

END BENTS 4 LT. & 4 RT.
I-75 OVER NOONDAY CREEK

COBB CO. I-75-3(4?) 284 CT. 5

SCALE: 3/8"=1'-0" (UNLESS NOTED) MAR. 1973

BRIDGE SHEET 21 OF 24

DESIGNED HJL | TRACED | REVIEWED LBP
DRAWN KAM | CHECKED CDB | APPROVED

LOCATION	NO. OF LOC.	MARK	LENGTH FT.	LENGTH IN.	NO. BARS REQ'D	TYPE	AG	B FT.	B IN.	C FT.	C IN.	D FT.	D IN.	E FT.	E IN.	F FT.	F IN.	H FT.	H IN.	J FT.	J IN.	K FT.	K IN.	N	Θ
SPAN ONE LEFT	1																								
		401A	VARY		318	1																			
		403	3-	10	126	31	4	4	0- 9		1- 1 7/8		1- 1 7/8												
		501	34-	0	378	1			31-11 1/2		2- 0														
		502A	36-	4	199	1																			
		502B	27-	10	195	1																			
		504A	59-	7	16	1																			
		504A	59-	7	16	1																			
		505	6-	3	149	14			0-10		1- 5 1/8		2- 0		1- 0		0- 9								
		1501	34-	0	4	1			34- 8 1/2		2- 6														
		1502	59-	2	4	1																			
		1503	3-	0	8	1																			
SPAN TWO LEFT	1																								
		401A	VARY		418	1																			
		403	3-	10	126	31																			
		501	34-	0	144	1																			
		502A	36-	4	192	1																			
		502B	27-	10	192	1																			
		504C	40-	0	16	1																			
		504D	40-	4	16	1																			
		505	6-	3	192	14																			
		1501	34-	0	4	1																			
		1502	59-	2	4	1																			
		1503	3-	0	8	1																			
SPAN THREE LEFT	1																								
		401B	VARY		419	1																			
		402	8-	0	95	3			3- 0		3- 0														
		403	3-	10	63	31																			
		404	4-	0	43	21	2		3- 0		2- 6														90
		501	34-	0	184	1																			
		502A	36-	4	192	1																			
		502B	27-	10	192	1																			
		504A	59-	7	16	1																			
		504B	59-	7	16	1																			
		505	6-	3	192	14																			
		1501	34-	0	4	1																			
		1502	59-	2	4	1																			
		1503	3-	0	8	1																			

LOCATION	NO. OF LOC.	MARK	LENGTH FT.	LENGTH IN.	NO. BARS REQ'D	TYPE	AG	B FT.	B IN.	C FT.	C IN.	D FT.	D IN.	E FT.	E IN.	F FT.	F IN.	H FT.	H IN.	J FT.	J IN.	K FT.	K IN.	N	Θ
		901	22-	6	6	1																			
		1001	36-	9	4	3																			
		1002	59-	2	2	1																			
		1003	3-	0	4	1																			
SPAN TWO RIGHT	1																								
		401F	VARY		318	1																			
		403	3-	10	126	31																			
		501	34-	0	394	1																			
		502A	36-	4	192	1																			
		502B	27-	10	197	1																			
		504C	41-	1	16	1																			
		504H	41-	8	16	1																			
		505	6-	3	148	14																			
		1501	34-	5	4	3																			
		1502	59-	2	4	1																			
		1503	3-	0	8	1																			

FED. ROAD DIV. No.	STATE	FED. AID PROJ. No.	STATE AID PROJ. No.	FISCAL YEAR	SHEET No.	TOTAL SHEETS
4	GA.	I-75-3 (90) 284		'75	32	76

Contract 5

BRIDGE NO. 1 LT E RT.

STATE HIGHWAY DEPARTMENT OF GEORGIA
BRIDGE DIVISION

BAR REINFORCEMENT STEEL SH. NO 1

I-75 OVER NOONDAY CREEK

COBB COUNTY I-75-3(90)284 Ct. 5

NO SCALE SEPT, 1974

DESIGNED ____ TRACED ____ REVIEWED ____
DRAWN ____ CHECKED ____ APPROVED ____

BRIDGE SHEET 22 OF 24

LOCATION	NO. OF LOC.	MARK	LENGTH FT.	LENGTH IN.	NO. BARS RECD.	TYPE	AG	B FT.	B IN.	C FT.	C IN.	D FT.	D IN.	E FT.	E IN.	F FT.	F IN.	H FT.	H IN.	J FT.	J IN.	K FT.	K IN.	N	θ
ABUTMENT 1	1																								
		455	26	4	1	34	6	24	1	3	0	2	0	3	0										
		457	27	1	1	34	6	25	10	3	0	2	0	3	0										
		459	3	6	1	8		2	6	0	6	0	6											83	83
		460	5	0	21	6		2	0	2	6	0	0	0	6									83	7
		461	VARY		2	6		2	6	VARIES		0	0	0	6									83	7
		462	7	6	3	6		2	0	5	0	0	0	0	6									83	7
		463	5	0	36	6		2	0	2	6	0	0	0	6									83	7
		464	5	9	1	6		2	9	2	6	0	0	0	6									83	7
		465	6	6	3	6		2	0	4	0	0	0	0	6									83	7
		466	6	9	14	1																			
		467	4	0	1	8		3	0	0	6	0	6											83	83
		468	44	4	1	34	6	21	6	2	0	20	0	2	0										
		469	43	10	1	34	6	21	0	2	0	20	0	2	0										
		470	4	10	24	4		9	10	1	0"													45	
		5628	34	7	12	3		32	6 1/2	2	0														
		5608	35	1	12	3		33	0 1/2	2	0														
		561	6	10	104	1																			
		562	5	2	24	1																			
		563	5	8	30	4		2	8	1	6	1	6												
		564	9	8	34	25	4	2	8	1	8														
		565A	30	9	2	3		28	9	2	0														
		565B	31	3	4	3		29	3	2	0														
		566	VARY		20	3		VARIES		2	0														
		567	VARY		3	3		VARIES		2	0														
		568	VARY		24	1																			
		569	10	8	2	3		8	8	2	0														
		570	34	7	2	48		0	0	1	9	28	9 1/2	0	0	0	0	2	0	2	0				
		571	5	2	24	1																			
		572	8	0	3	34	6	4	0	0	0	2	0	2	0										
		573	38	10	2	3		36	10	2	0														
		574	41	6	3	3		39	6	2	0														
		575	11	0	18	14		2	6	2	0	2	3	2	0	2	3								
		576	9	7	8	48		3	3 1/2	2	3	0	0	2	0	2	0	0	0	0	0				
		577	19	4	2	3		17	6	2	0														
		578	38	4	6	3		36	4	2	0														
		579	19	10	1	3		17	9 1/2	2	0														
		580	VARY		22	1																			
		61	VARY		17	1																			
		582	9	6	8	1																			
		583	42	6	13	34	6	19	0	9	0	21	6	2	0										
		584	41	6	13	34	6	18	0	2	0	20	6	2	0										
		585	35	6	13	34	6	25	7	0	0	2	3	2	0										
		586	24	6	13	34	6	21	1	3	0	4	0	3	0										
		587	10	0	54	1																			
		588	5	7	2	1																			
		589	5	3	12	3		1	6	2	6														
		590	VARY		17	1																			
		591	VARY		22	1																			
		592	7	11	4	35	3	3	2	1	6 1/2	1	6 1/2												
		593	3	6	2	6		4	5 3/4	1	6	0	0	1	6									45	45
		594	9	6	1	50	4	4	3	0	1	6	2	6	0	5	0	6	0	9					
		595	5	11	4	25	4	4	2	0	3	6													
		596	VARY		3	50	3	3	VARIES		1	6 1/2	1	6 1/2											
		597	32	5	2	1																			
		598	11	6	64	21	2	1	3	7/8	2	0													90
		599	6	5	9	50	3	4	0	8	1	6 1/2	1	6 1/2											
		652	9	0	14	1																			
		653	9	3	8	1																			

LOCATION	NO. OF LOC.	MARK	LENGTH FT.	LENGTH IN.	NO. BARS RECD.	TYPE	AG	B FT.	B IN.	C FT.	C IN.	D FT.	D IN.	E FT.	E IN.	F FT.	F IN.	H FT.	H IN.	J FT.	J IN.	K FT.	K IN.	N	θ
		654	14	6	3	1																			
		655	4	3	3	1																			
		755	7	0	7	9	2	6	3																
		756	7	4	6	9	2	6	7																
		757	7	7	1	9	2	6	10																
		758	9	8	7	9	2	8	11																
		759	10	0	7	9	2	9	3																
		760	12	0	3	1																			
		761	4	9	3	1																			
		762	11	6	20	1																			
		763	4	9	12	1																			
		764	6	0	4	1																			
		765	VARY		5	1																			
		766	13	5	5	3		11	5	2	0														
		851	VARY		12	1																			
		852	8	4	11	5		6	6	1	10													87	
		853	5	1	12	5		3	5	1	10													87	
		956	9	0	21	1																			
		957	11	6	6	1																			
		1056	7	4	7	9	2	6	3																
		1057	7	11	2	9	2	6	10																
		1058	8	2	2	9	2	7	1																
		1059	9	1	1	9	2	8	0																
		1060	8	10	1	9	2	7	9																
		1061	9	4	2	9	2	8	3																
		1062	10	2	1	9	2	9	1																
		1063	11	1	2	9	2	10	0																
		1064	7	4	7	9	2	6	3																
		1065	11	1	1	9	2	10	0																
		1066	11	6	42	1																			
		1067	12	0	6	1																			
BENT 2 LT	1	456	10	5	72	25	4	4	2	5	2	5													
		553	VARY		14	25	4	4	VARIES		2	8													
		555	13	4	92	25	4	4	3	11	2	3													
		556	14	2	16	25	4	4	3	11	2	8													
		557	31	9	4	1																			
		751	4	6	31	10	2	2	7	0															
		551	4	3	2	1																			
		952	5	6	1	1																			
		953	10	6	14	10	2	2	8	6															
		1052	11	2	8	10	2	2	4	0															
		11-1A	22	9	2	9	2	21	7																
		11518	45	6	2	9	21	44	6																
		1152	18	8	4	9	2	17	5 1/2																
		1153	14	8	4	1																			
		1154	11	6	4	1																			
		1155	9	0	4	1																			
		1156	22	0	2	1																			
		1157	17	6	2	1																			

FED. ROAD DIV. No.	STATE	FED. AID PROJ. No.	STATE AID PROJ. No.	FISCAL YEAR	SHEET No.	TOTAL SHEETS
4	GA.	I-75-3 (60)269		'75	33	76

Contract 6

BRIDGE NO. 1 LT. E AT.

STATE HIGHWAY DEPARTMENT OF GEORGIA
BRIDGE DIVISION

BAR REINFORCEMENT STEEL SH. NO. 2
I-75 OVER NOONDAY CREEK
COBB CO. I-75-3(60)269 CT. 5
NO SCALE SEPT. 1974

DESIGNED ____ DRAWN ____ TRACED ____ CHECKED ____ REVIEWED ____ APPROVED ____

BRIDGE SHEET 23 OF 24

FED. ROAD DIV. No.	STATE	FED. AID PROJ. No.	STATE AID PROJ. No.	FISCAL YEAR	SHEET No.	TOTAL SHEETS
4	GA.	I-75-3 (40)		'75	34	76

Contract 5

LOCATION	NO. OF LOC.	MARK	LENGTH FT.-IN.	NO. BARS REQ'D	TYPE	A	G	B	C	D	E	F	H	J	K	N	Θ
		1159	12- 6	2	1												
		1160	11- 0	2	1												
		1162A	33- 0	2	24			26- 6	6- 4 3/8	0- 0	1- 0	0- 0					
		1162B	33- 0	2	24			26- 6	6- 4 3/8	0- 0	1- 0	0- 0					
		1163	19- 0	4	1												
		1164	14- 3	4	1												
		1165	7- 8	36	9	2		6- 6									
		1166B	15- 4	12	1												
		1167A	16- 3	12	1												
		1168A	17- 2	12	1												
		1169	14- 3	36	1												
BENT 3 LEFT	1																
		456	11- 5	78	25	4	4	2- 6	2- 8								
				4													
		554	VARY	14	25	4	4	VARIES	2-11								
		557	31- 9	8	1												
		558	13- 7	88	25	4	4	3-11	2- 4 1/2								
		559	14- 8	16	25	4	4	3-11	2-11								
		753	8- 4	31	10	2	2	7- 3									
		952	5- 6	2	1												
		954	10- 6	16	10	2	2	8- 6									
		1054	11- 2	9	10	2	2	9- 0									
		1151A	22- 9	2	9												
		1151B	45- 6	2	9												
		1161A	11- 4	16	1												
		1162A	33- 0	2	24												
		1162B	33- 0	2	24												
		1165	7- 8	48	9												
		1170	19- 2	4	9	2		17-11 1/2									
		1171	16- 5	4	9	2		15- 2 1/2									
		1172	12- 3	4	1												
		1173	9- 6	4	1												
		1174	22- 0	2	1												
		1175	20- 0	2	1												
		1176	15- 0	3	1												
		1177	12- 6	2	1												
		1178	10- 6	2	1												
		1179	19- 3	4	1												
		1180	14- 3	4	1												
		1181A	12- 2	16	1												
		1182	19- 9	48	1												
		1183A	13- 3	16	1												
BENT 4 LEFT	1																
		451	[illegible]	24	32	5	5	[illegible]	1- [illegible]	1- 8							
		452	9- 5	[illegible]	25	4	4	2- 9	1- 6								
		453	[illegible]- 9	6	25	4	4	2- 2	2- 2								
		454	1- 8	8	1												
		551	9- 8	32	1												
		552	6- 8	44	1												
		651	6- 0	6	1												
		1051	36- 0	8	3			34- 0	2- 0								
BENT 3 RIGHT	1																
		451	6- 9	24	32												

LOCATION	NO. OF LOC.	MARK	LENGTH FT.-IN.	NO. BARS REQ'D	TYPE	A	G	B	C	D	E	F	H	J	K	N	Θ
		452	9- 5	58	25												
		453	9- 5	6	25												
		454	1- 8	8	1												
		551	9- 8	32	1												
		552	6- 8	44	1												
		651	6- 0	6	1												
		1051	36- 0	8	3												
BENT 2 RIGHT	1																
		456	10- 5	65	25												
		553	VARY	14	25	4	4	VARIES	2- 8								
		555	13- 4	92	25												
		556	14- 2	16	25												
		557	31- 9	8	1												
		751	8- 6	20	10												
		752	8- 3	11	10	2	2	6- 9									
		951	6- 3	2	1												
		952	5- 6	1	1												
		953	10- 6	16	10												
		1053	10-11	8	10	2	2	8- 9									
		1151A	22- 9	2	9												
		1151B	45- 6	2	9												
		1152	18- 8	4	9												
		1153	14- 8	4	1												
		1154	11- 6	4	1												
		1155	9- 0	4	1												
		1156	22- 0	2	1												
		1157	17- 6	2	1												
		1158	14- 0	2	1												
		1159	12- 6	2	1												
		1160	11- 0	2	1												
		1162A	33- 0	2	24												
		1162B	33- 0	2	24												
		1163	19- 0	4	1												
		1164	14- 3	4	1												
		1165	7- 8	36	9												
		1166A	10- 2	12	1												
		1167B	15- 1	12	1												
		1168B	15-11	12	1												
		1169	14- 3	36	1												
BENT 3 RIGHT	1																
		456	11- 5	108	25												
		554	VARY	14	25	4	4	VARIES	2-11								
		557	31- 9	8	1												
		558	13- 7	88	25												
		559	14- 6	16	25												
		753	[illegible]- 9	22	10												
		754	9- 0	11	10	2	2	7- 6									
		952	5- 6	2	1												
		955	11- 3	16	10	2	2	9- 3									

LOCATION	NO. OF LOC.	MARK	LENGTH FT.-IN.	NO. BARS REQ'D	TYPE	A	G	B
		1055	11- 8	9	10	2	2	9- 6
		1151A	22- 9	2	9			
		1151B	45- 6	2	9			
		1161B	21- 3	16	1			
		1162A	33- 0	2	24			
		1162B	33- 0	2	24			
		1165	7- 8	48	9			
		1170	19- 2	4	9			
		1171	16- 5	4	9			
		1172	12- 3	4	1			
		1173	9- 6	4	1			
		1174	22- 0	2	1			
		1175	20- 0	2	1			
		1176	15- 0	3	1			
		1177	12- 6	2	1			
		1178	10- 6	2	1			
		1179	19- 3	4	1			
		1180	14- 3	4	1			
		1181B	22- 1	16	1			
		1182	19- 9	48	1			
		1183B	22-11	16	1			
BENT 4 RIGHT	1							
		451	6- 9	31	32			
		452	9- 5	58	25			
		453	9- 5	6	25			
		454	1- 8	8	1			
		551	9- 8	32	1			
		552	6- 8	44	1			
		651	6- 0	6	1			
		1051	36- 0	8	3			

BRIDGE NO. 1 LT. & RT.

STATE HIGHWAY DEPARTMENT OF GEORGIA

BRIDGE DIVISION

BAR REINFORCEMENT STEEL SH. NO. 3

I-75 OVER NOONDAY CREEK

COBB CO. I-75-3(40) CT. 5

NO SCALE SEPT. 1974

DESIGNED ______ TRACED ______ REVIEWED ______

DRAWN ______ CHECKED ______ APPROVED ______

CALCULATION SHEET

PROJECT: I-75 / I-575 NORTHWEST CORRIDOR
JOB NUMBER NH000-0073-03(242)
CALC NO. BR#31

SUBJECT: Bridge Maintenance Reports
BY: JCR DATE: 11/30/2009

SHEET NO.
SHEET REV.

BRIDGE INVENTORY DATA LISTING GEOI A DEPARTMENT OF TRANSPORTATION

Structure ID: 067-0083-0 **Cobb** SUFF. RATING 86.30

Location & Geography

*	Structure I.D.No:	067-0083-0	
	200 Bridge Information	06	
*	6A Feature Int:	NOONDAY CREEK	
*	6B Critical Bridge:	0	
*	7A Route Number Carried:	SR00401	
*	7B Facility Carried:	I-75 (NBL)	
*	9 Location:	2.5 MI E OF KENNESAW	
	2 DOT District:	7	
	207 Year Photo:	2009	
*	91 Inspection Frequency:	24 Date: 04/08/2009	
	92A Fract Crit Insp Freq:	00 Date: 02/01/1901	
	92B Underwater Insp Freq:	00 Date: 02/01/1901	
	92C Other Spc. Insp Freq:	00 Date: 02/01/1901	
*	4 Place Code:	00000	
*	5 Inventory Route (O/U):	1	
	Type:	1	
	Designation:	1	
	Number:	00075	
	Direction:	0	
*	16 Latitude:	34-01.2600 MMS Prefix: SR	
*	17 Longitude:	84-34.2010 MMS Suffix: 00 MP: 270.25	
	98 Border Bridge:	000 %Shared: 00	
	99 ID Number:	000000000000000	
*	100 STRAHNET:	1	
	12 Base Highway Network:	1	
	13A LRS Inventory Route:	671040100	
	13B Sub Inventory Route:	0	
*	101 Parallel Structure:	R	
*	102 Direction of Traffic:	1	
*	264 Road Inventory Mile Post:	012.62	
*	208 Inspection Area:	09 Initials: JMC	
	Engineer's Initial:	sgm	

* Location I.D. No.: 067-00401D-270.25N

*	104 Highway System:	1	
*	26 Functional Classification:	11	
*	204 Federal Route Type:	1 No.: 00007	
	105 Federal Lands Highway:	0	
*	110 Truck Route:	1	
	206 School Bus Route:	0	
	217 Benchmark Elevation:	0000.00	
	218 Datum:	0	
*	19 Bypass Length:	01	
*	20 Toll:	3	
*	21 Maintenance:	01	
*	22 Owner:	01	
*	31 Design Load:	6	
	37 Historical Significance:	5	
	205 Congressional District:	11	
	27 Year Constructed:	1975	
	106 Year Reconstructed:	0000	
	33 Bridge Median:	1	
	34 Skew:	15	
	35 Structure Flared:	0	
	38 Navigation Control:	0	
	213 Special Steel Design:	0	
	267 Type of Paint:	5	
*	42 Type of Service on:	1	
		5	
	214 Movable Bridge:	0	
	203 Type Bridge:	O-O-M-O	
	259 Pile Encasement:	3	
*	43 Structure Type Main:	3 02	
	45 No. Spans Main:	003	
	44 Structure Type Appr:	0 00	
	46 No. Spans Appr:	0000	
	226 Bridge Curve Horz:	1 Vert: 0	
	111 Pier Protection:	0	
	107 Deck Structure Type:	1	
	108 Wearing Surface Type:	1	
	M	0	
	F	0	

Signs & Attachments

	225 Expansion Joint Type:	15	
	242 Deck Drains:	1	
	243 Parapet Location:	3	
	Height:		2.10
	Width:		1.30
	238 Curb:		0.00 0
	239 Handrail:	7 7	
*	240 Median Barrier Rail:	0	
	241 Bridge Median Height:		0.00
	Width:		0.00
*	230 Guardrail Loc Dir Rear:	3	
	Fwrd:	2	
	Oppo Dir Rear:	0	
	Fwrd:	0	
	244 Approach Slab:	3	
	224 Retaining Wall:	0	
	233 Posted Speed Limit:	65	
	236 Warning Sign:	0	
	234 Delineator:	0	
	235 Hazard Boards:	0	
	237 Utilities Gas:	00	
	W	00	
	Ele	22	
	Telephone:	00	
	Sc	00	
	247 Lighting Street:	0	
	Naviagtion:	0	
	Aerial:	0	
*	248 County Continuity No.:	00	

Programming Data

201 Project No.: I-75-3 (40) 284 CT.5
202 Plans Available: 4
249 Prop. Proj. No. 0000000000000000
250 Approval Status: 0000
251 P.I. No.: 0000000
252 Contract Date: 02/01/1901
260 Seismic No.: 00000
75 Type Work: 00 0
94 Bridge Imp. Cost: $ 0
95 Roadway Imp. Cost: $ 0
96 Total Imp Cost: $ 0
76 Imp. Length: 000000
97 Imp. Year: 0000
114 Future ADT: 216240 Year: 2027

Hydraulic Data

215 Waterway Data
Highwater Elev.: 0000.0 Year: 1900
Avg. Streambed Elev.: 0000.0 Freq.: 00
Drainage Area: 00011
Area Of Opening: 000975
113 Scour Critical: 5
216 Water Depth: 02.2 Br. Height: 30.8
222 Slope Protection: 1
221 Spur Dikes Rear: 0 Fwrd: 0
219 Fender System: 0
220 Dolphin: 0
223 Culvert Cover: 000
Type: 0
No. Barrels: 0
Width: 0.00 Height: 0.00
Length: 0 Apron: 0
* 265 U/W Insp. Area: 0 Diver: ZZZ

* Location I.D. No.: 067-00401D-270.25N

Measurements

* 29 ADT: 144160 Year: 2007
109 % Trucks: 0
* 28 Lanes On: 03 Under: 00
210 No. Tracks On: 00 Under: 00
* 48 Max. Span Length: 0082
* 49 Structure Length: 245
51 Br. Rwdy. Width: 58.90
52 Deck Width: 61.30
* 47 Tot. Horz. Cl: 58.90
50 Curb/Sdewlk Width: 0.00/0.00
32 Approach Rdwy Width: 060
* 229 Shoulder Width:
Rear Lt: 14.00 Type: 1 Rt: 10.00
Fwrd Lt: 14.00 Type: 1 Rt: 10.00
Pavement Width:
Rear: 36.00 Type: 1
Fwrd: 36.00 Type: 1
Intersection Rear: 0 Fwrd: 0
36 Safety Features Br. Rail: 1
Transition: 1
App. G. Rail: 1
App. Rail End: 1
53 Minimum Cl Over: 99 ' 99 "
Under: N 00 ' 00 "
* 228 Min. Vertical Cl
Act. Odm Dir: 99 ' 99 "
Oppo. Dir: 99 ' 99 "
Posted Odm. Dir: 00 ' 00 "
Oppo. Dir: 00 ' 00 "
55 Lateral Undercl. Rt: N 0.00
56 Lateral Undercl. Lt: 0.00
* 10 Max Min Vert Cl: 99 ' 99 " Dir: 0
39 Nav Vert Cl: 000 Horz: 0000
116 Nav Vert Cl Closed: 000
245 Deck Thickness Main: 7.00
Deck Thick Approach: 0.00
246 Overlay Thickness: 0.00
212 Year Last Painted: Sup: 1994 Sub: 0000

Ratings

65 Inventory Rating Method: 1
63 Inventory Rating Method: 1
66 Inventory Type: 2 Rating: 34
64 Operating Type: 2 Rating: 58
231 Calculated Loads
H-Modified: 21 0
HS-Modified: 30 0
Type 3: 33 0
Type 3s2: 40 0
Timber: 37 0
Piggyback: 40 0
261 H Inventory Rating: 37
262 H Operating Rating: 63
67 Structural Evaluation: 7
58 Deck Condition: 7
59 Superstructure Condition: 8
* 227 Collision Damage: 0
60A Substructure Condition: 7
60B Scour Condition: 8
60C Underwater Condition: N
71 Waterway Adequacy: 9
61 Channel Protection Cond: 8
68 Deck Geometry: 7
69 UnderClr. Horz/Vert: N
72 Appr. Alignment: 8
62 Culvert: N

Posting Data

70 Bridge Posting Required: 5
41 Struct Open, Posted, Cl: A
* 103 Temporary Structure: 0
232 Posted Loads H-Modified: 00
HS-Modified: 00
Type 3: 00
Type3s2: 00
Timber: 00
Piggyback: 00
253 Notification Date 02/01/1901
253 Fed Notify Date: 02/01/1901 0

GEORGIA DEPARTMENT OF TRANSPORTATION

Bridge Inspection Report

District: 7 **Inspection Date:** 4/8/2009 **Inspection Area:** 09

Bridge Inspector: Jerry Cooper **Over:** NOONDAY CREEK **Bridge Status:** 06

Location ID: 067-00401D-270.25N **County:** Cobb

Structure ID: 067-0083-0 **Road Name:** I-75 (NBL)

EVALUATION & DEFICIENCIES

SubStructure: **Year Painted:** 0000

Concrete Caps At Both Abutments, Founded On Steel H-Piles.
Minor cracking in both abutment caps.
Minor settlement at both abutments.
1 pile exposed at abutment 1 less than 1'.
Bent 2 And 3 Have Concrete Caps On 3 Concrete Columns, Founded On Spread Footings.
Very minor spalls on column 3 at bent 2.
Minor cracking bent 3, right side.
Bent #3 = H-37 Calculated 2004 by Central Office (Load Factor)

SuperStructure: **Year Painted:** 1994

3 Span Steel Beam, (8 W36 X 194 Beams Per Span).
Square End Cover Plates, (Welded).
Minor section loss on various bearings, but all have been cleaned and painted.
Span #2 = H-44 Calculated 2004 by Central Office (Load Factor).

Deck:

7.0" Concrete Slab.
Minor transverse cracking on the top with some very minor cracking on the bottom.
The joint in the parapet at bents 2 and 3 are jammed.
Appears that the joint in the handrail was constructed smaller then the deck joint.
(This condition caused the spall noted below).
Minor spall in the left outside handrail parapet at bent 3.
Inside at bent 2 crack spall.
Minor settlement of both approach slabs, overlaid with asphalt.
Deck: H-32 Calculated 2004 by Central Office (Load Factor).

General:

Built in 1975 Project # I-75-3 (40) 284CT. 5
This structure is in Good Condition with some minor cracking and spalls.
Hand tools and ladder used.
Calculations for this structure were determined by the Central Office. - February, 2004.

Condition Rating

Component	Material	Rating
Substructure	Concrete	7
Superstructure	Steel	8
Deck	Concrete	7

Temp Shored: **No**

Truck Type	Gross/H-Mod	HSMod	Tand	3-S-2	Log	Piggy
Calculated Posting	21	30	33	40	37	40
Posting Required	No	No	No	No	No	No
Existing Posting	00	00	00	00	00	00

Not a School Bus Route.

Structure Does Not Require Posting

GEORGIA DEPARTMENT OF TRANSPORTATION

Deficiency Report

District: 7 **Inspection Date:** 4/8/2009 **Inspection Area:** 09

`ridge Inspector: Jerry Cooper **Over:** NOONDAY CREEK

..ocation ID: 067-00401D-270.25N **County:** Cobb

Structure ID: 067-0083-0 **Asst. District Engineer:** Shun Pringle

EVALUATION & DEFICIENCIES

I-75 (NBL) Over NOONDAY CREEK-------2.5 MI E OF KENNESAW

Item	Units	Work	P	Date Reported	Location	Date Completed	Complete
800	LIN. FT.	240	B	5/29/2001		12/14/2001	199.00
845	HOURS	20	B	3/15/2005			***
845	HOURS	56	B	3/21/2007		7/10/2007	111.00

Comments:

GEORGIA DEPARTMEN . OF TRANSPORTATION

Waterway Report

District: 7
Bridge Inspector: Jerry Cooper
Location ID: 067-00401D-270.25N
Structure ID: 067-0083-0

Inspection Date: 4/8/2009
Over: NOONDAY CREEK
County: Cobb
Road Name: I-75 (NBL)

Inspection Area: 09
Skew: 15

Span #:	1	2	3
Length:	**81.5**	**82.0**	**81.5**

Upstream -
Upstream +

		1	2	3	4
08/18/1997	BDH DEM		23.80	26.00	6.10
04/20/1999	DEM		23.80	26.00	6.10
08/05/2003	JMC-WBR		24.00	26.00	6.00
03/15/2005	JMC-WBR		24.10	25.90	6.00
03/21/2007	JMC-WBR		24.40	26.20	6.00
04/08/2009	JMC-WBR		24.20	26.10	6.00

Downstream -
Downstream +

		1	2	3	4
08/18/1997	BDH DEM		25.40	26.70	6.40
04/20/1999	DEM		25.40	26.70	6.40
08/05/2003	JMC-WBR		25.50	26.80	6.50
03/15/2005	JMC-WBR		25.70	26.60	6.60
03/21/2007	JMC-WBR		26.20	26.50	6.60
04/08/2009	JMC-WBR		26.40	26.20	6.60

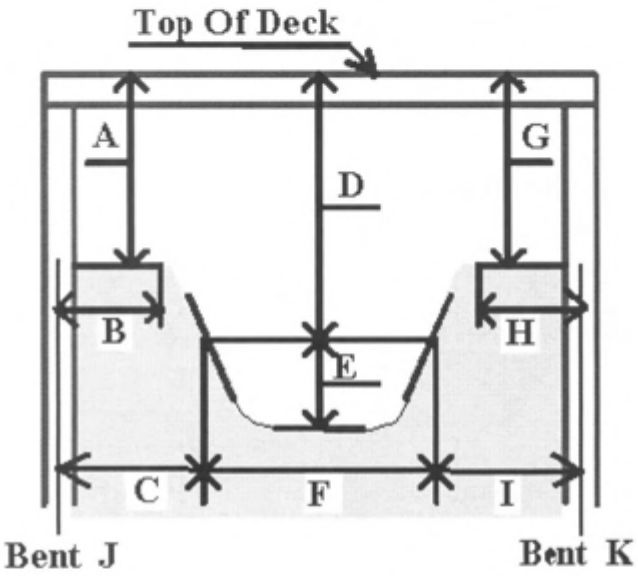
GEORGIA DEPARTMEN . OF TRANSPORTATION

Waterway Report

District: 7
Bridge Inspector: Jerry Cooper
Location ID: 067-00401D-270.25N
Structure ID: 067-0083-0

Inspection Date: 4/8/2009
Over: NOONDAY CREEK
County: Cobb
Road Name: I-75 (NBL)

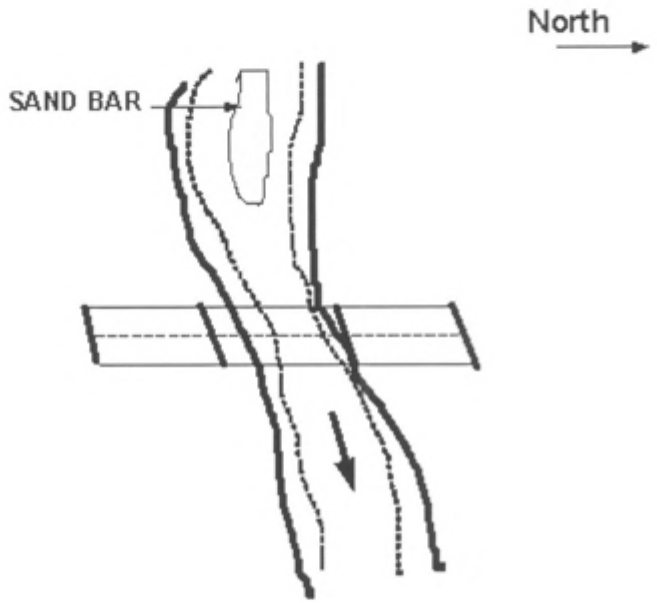
Inspection Area: 09
Skew: 15



Side view at the Channel.

B, C, H, & I are measured to center of bent or B.F.P.R.

A:	24
B:	16
C:	32
D:	30.8
E:	02.2
F:	23
G:	25
H:	21
I:	27
J:	2
K:	3



Location of Bridge Height + 28' from bent #2

Scour Condition: 8 **Waterway Adequacy:** 9 **Channel Protection:** 8

15 = SubStructure
0 = Channel Skew
15 = Stream Angle

Comments:
Bridge is super elevated downstream side is the high side.

GEORGIA DEPARTMEN JF TRANSPORTATION

Bridge Component Report

District: 7
Bridge Inspector: Jerry Cooper
Location ID: 067-00401D-270.25N
Structure ID: 067-0083-0

Inspection Date: 4/8/2009
Over: NOONDAY CREEK
County: Cobb
Road Name: I-75 (NBL)

Inspection Area: 09

SubStructure Data

Bent#	Type	Foundation	Col	#Cols	Piling	#Piles	Sway	CAP	Remarks
1	A	DP		0		0		C	CAP ON STEEL PILE
2	B	SF	C	3		0		C	
3	B	SF	C	3		0		C	
4	A	DP		0		0		C	CAP ON STEEL PILE

SuperStructure Data

Span#	Beam Type	Spacing	Length	#Beams	Remarks
1	Steel Beams	8.50	81.50	8	W36 X 194
2	Steel Beams	8.50	82.00	8	W36 X 194
3	Steel Beams	8.50	81.50	8	W36 X 194

Bearing Data

Span#	Rear Type Bearing	FWD Type Bearing	Remarks
1	02 - Fixed Plate	01 - Sliding Plate	GOOD
2	02 - Fixed Plate	01 - Sliding Plate	GOOD
3	01 - Sliding Plate	02 - Fixed Plate	GOOD

CALCULATION SHEET

PROJECT: I-75 / I-575 NORTHWEST CORRIDOR
JOB NUMBER NH000-0073-03(242)
CALC NO. BR#31

SUBJECT: Bridge Hydraulic Information
BY: JCR DATE: 11/30/2009

SHEET NO.
SHEET REV.

HYDRAULIC TABLE (50-YEAR STORM)

	UNCONSTRICTED SECTION	*EXISTING CONDITIONS*	*PROPOSED CONDITIONS*
FLOODSTAGE ELEVATION BRIDGE SECTION (ft)	941.30	941.59	941.59
FLOODSTAGE ELEVATION APPROACH SECTION (ft)*	946.57	947.06	947.06
AREA OF OPENING UNDER FLOODSTAGE (ft^2)	**********	1382	1382
DISCHARGE THROUGH BRIDGE (cfs)	**********	6003	6003
DISCHARGE OVER ROADWAY (cfs)	**********	0	0
CHANNEL VELOCITY (f/s)	5.19	7.37	7.37
MEAN VELOCITY (f/s)	**********	4.34	4.34
2-YEAR FLOODSTAGE ELEVATION BRIDGE SECTION (ft)	937.06	937.19	937.19
BACKWATER HEIGHT (ft)	**********	0.49	0.49

* Approach Section is located upstream of the southbound bridge (Section 1250).

HYDRAULIC TABLE (100-YEAR STORM)

	UNCONSTRICTED SECTION	*EXISTING CONDITIONS*	*PROPOSED CONDITIONS*
FLOODSTAGE ELEVATION BRIDGE SECTION (ft)	942.19	942.49	942.49
FLOODSTAGE ELEVATION APPROACH SECTION (ft)*	947.49	947.86	947.86
AREA OF OPENING UNDER FLOODSTAGE (ft^2)	**********	1544	1544
DISCHARGE THROUGH BRIDGE (cfs)	**********	6889	6889
DISCHARGE OVER ROADWAY (cfs)	**********	0	0
CHANNEL VELOCITY (f/s)	5.27	7.76	7.76
MEAN VELOCITY (f/s)	**********	4.46	4.46
2-YEAR FLOODSTAGE ELEVATION BRIDGE SECTION (ft)	937.06	937.19	937.19
BACKWATER HEIGHT (ft)	**********	0.37	0.37

* Approach Section is located upstream of the southbound bridge (Section 1250).

HYDRAULIC TABLE (500-YEAR STORM)

	UNCONSTRICTED SECTION	*EXISTING CONDITIONS*	*PROPOSED CONDITIONS*
FLOODSTAGE ELEVATION BRIDGE SECTION (ft)	944.02	944.33	944.33
FLOODSTAGE ELEVATION APPROACH SECTION (ft)*	948.96	949.10	949.04
AREA OF OPENING UNDER FLOODSTAGE (ft^2)	**********	1881	1881
DISCHARGE THROUGH BRIDGE (cfs)	**********	8519	8519
DISCHARGE OVER ROADWAY (cfs)	**********	0	0
CHANNEL VELOCITY (f/s)	5.18	8.18	8.18
MEAN VELOCITY (f/s)	**********	4.53	4.53
2-YEAR FLOODSTAGE ELEVATION BRIDGE SECTION (ft)	937.06	937.19	937.19
BACKWATER HEIGHT (ft)	**********	0.14	0.08

* Approach Section is located upstream of the southbound bridge (Section 1250).

NH000-0073-03(242) Cobb County
I-75 over Noonday Creek

Proposed widened bridges

MIN PROFILE GRADE ELEVATION	949.85
DEPTH OF CROSS SLOPE	0.84
DEPTH OF SLAB AND BEAM	5.06
BOTTOM OF BEAM ELEVATION	943.95

MINIMUM BOTTOM OF BEAM ELEVATION	943.95
50 YEAR FLOODSTAGE ELEVATION*	941.59
CLEARANCE	2.36

MINIMUM BOTTOM OF BEAM ELEVATION	943.95
100 YEAR FLOODSTAGE ELEVATION*	942.49
CLEARANCE	1.46

*Floodstage taken from proposed conditions model.